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## MORTISING AND BORING MACHINE.---Fig. 1.

Figure 1.

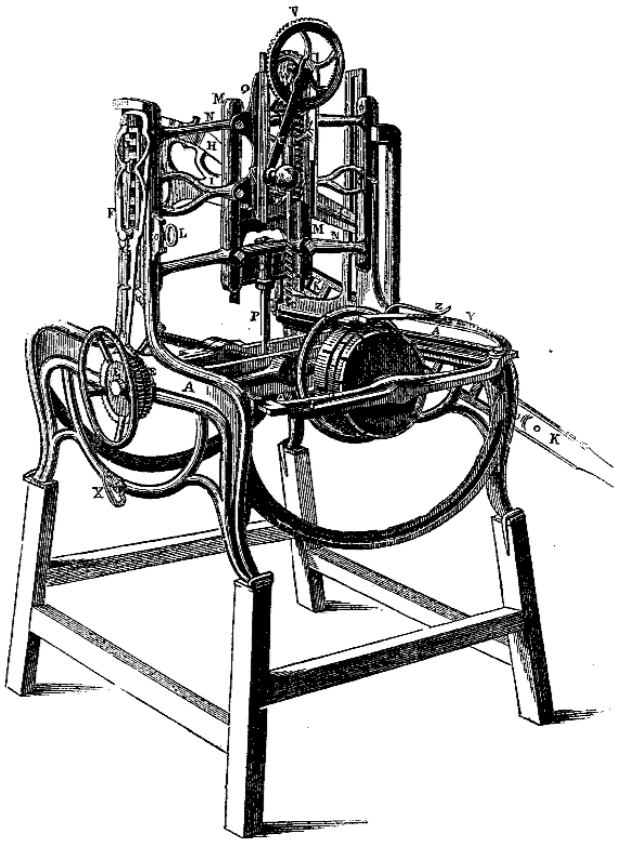
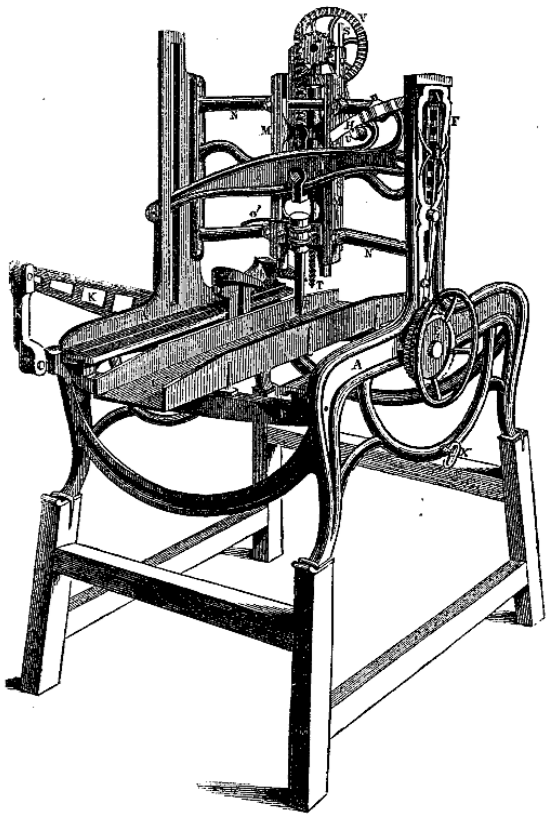


Figure 2.



The annexed engravings are perspective views of an improved boring and mortising machine, invented by George N. Stearns, of Syracuse, N. Y., who has taken measures to secure a patent for the same.

Figure 1 is a view of one end showing the auger or boring part, the index wheel and hub bed; figure 2 is a view of the opposite end showing the mortising chisel, and the feeding bed for other work than hubs.

A A are the sides of the machine; B, in figure 1, is the bed for retaining the hub to be mortised. It has a rotating index wheel, C, which is turned on its axis—it is also the axis on which the hub to be bored is placed—by the handle wheel, D. The hub is secured on the inner end of the horizontal screw behind wheel, D; Y is a catch to retain the index wheel as it is moved round at any position to form a mortise, and Z is the handle to shift this catch, so as to take it out and fasten it in any of the notches shown on the periphery of wheel C. Figure 2 shows a sliding feeding bed, C, for other work, and a clamp, D, to hold such work down; in these parts it differs from figure 1. The work to be mortised is first bored with the auger, T, and the mortise cleaned and finished by the chisel, P. The auger is operated by a handle, U, which has a wheel, V, on its axis gearing into a small pinion on the upper end of the auger shank, and gives it (the auger) a rapid rotary motion, during which action it feeds downwards by slides, S, in the grooves in the cheeks of the standards, Q. There is a ratchet wheel, W, on the back end of the auger spindle. This wheel meshes into a rack, R, which by turning the handle, U, in a contrary direction, the auger and its gearing are raised up again—after a hole is bored—to the top of the standards; K is the lever for working the mortising chisel, P, by a reciprocating motion; O is the chisel stock, and M M is an upright guide frame, of which N N are the cross braces, The lever, K, is connected by a link, K', to its fulcrum pin in the side of the machine. At its centre it is united by a link moving in a guide slot in the upright side post to the beam, I, which is attached to and operates the chisel, P. The other end of the beam, I, has a sector rack on it which rocks in guide notches, J, in the opposite upright post; H is a shipper on the upper part of beam I; it is inserted through an opening in the post, and as the beam rocks in it, working the chisel up and down, this shipper moves an open ratchet rod, F, the lower end, G, of which has two palls on it which take into the ratchet wheels, E E.—One of these palls take into one wheel, E, to move the sliding bed, C, with the work to be mortised on it, in one direction, to feed in the work to the chisel, while the other feeds back the bed. Each pallet is changed to act upon its peculiar wheel by a handle, L, and the shipper, H, moves the rod, F, so as to make the pallet move the wheel, E, one notch for every stroke of the lever, H. There is a cog wheel on the axle of E, inside, which works in a rack on the underside of the bed, C, and gives a backward and forward motion to said bed by the wheels, E, which are operated by the pallets described, because the notches of one wheel is placed in a contrary direction to those of the other, to be operated by its pallet in the proper direction to feed the work bed, C, back and forth by the movement of the lever as set forth; this is a very useful and ingenuous arrangement; O' is a small lever to change the position of the chisel to cut every mortise properly.

The bed, C, can be set at any angle to cut a tapering mortise, as the guide rails of the bed, C, are secured on swinging curved supports which have slots in them, and which are set by the screws, X X. The slots spoken of are not seen; they are inside of the frame, but their action, we presume, will be understood.

The nature of this invention consists of two parts, namely, in the simple mode of returning the auger after it has bored a hole by the wheel, W, and the rack, R, as has been described. There is a catch for holding up the slides of the auger stock at the head of the standards, or at any point desired. It also consists in the manner of feeding and reversing the motion of the work bed by the ratchet wheels E E, which are operated by the rod, R, and the shipper, H, worked by the chisel beam, the whole operations being consequent and in unison with the strokes of the working lever, K.

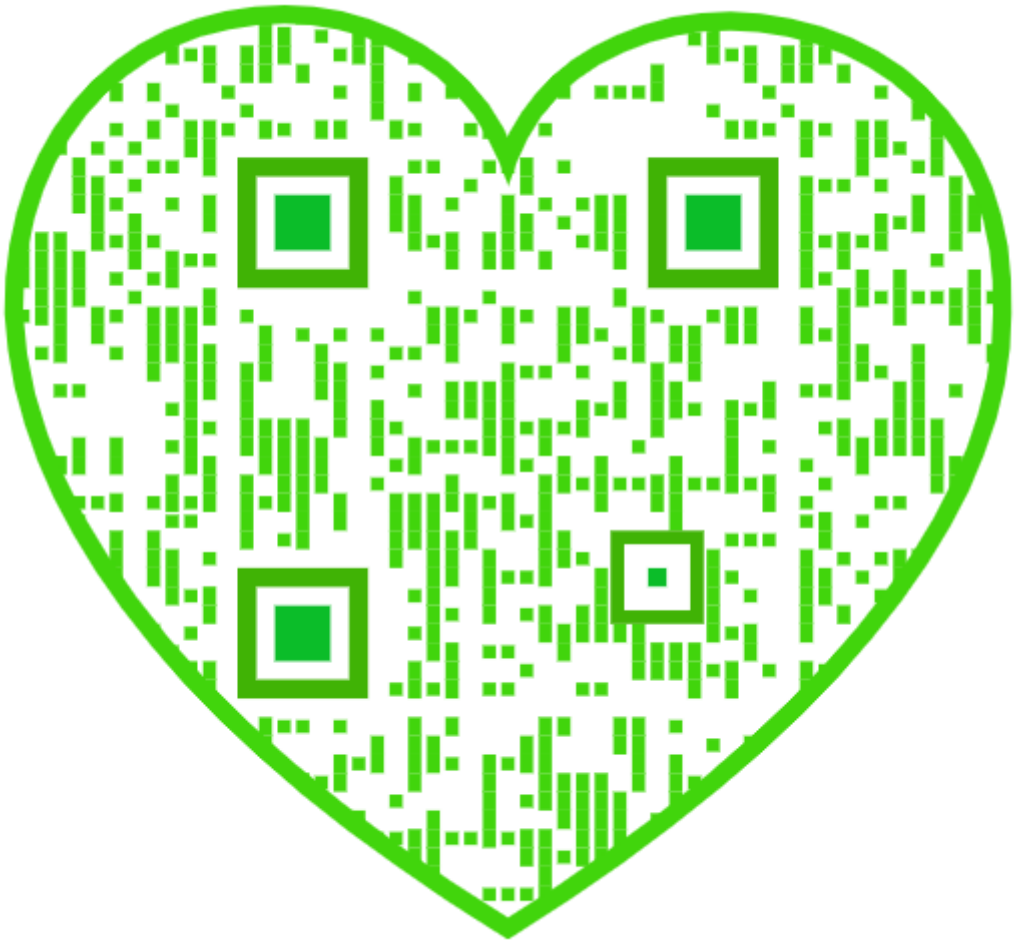
When a hub is to be mortised, as we have stated before, it is secured by the horizontal screw shown in figure 1, and the places for the mortises are first bored by the auger, T the index wheel guiding the hub for the auger to bore in the proper place for each mortise; the mortises are finished afterwards by the chisel, P. The hub bed is capable of being moved forward to bring the hub below the chisel. Other work to be mortised is first bored with the auger, and as the bed, C, is not moved except by the operation of the chisel lever, it is stationary while the work is being bored for the mortise first; after that it is moved below the chisel, and operated as has been described.

This machine possesses the quality of mortising hubs, framing, or any kind of work requiring mortising. We have seen a large working machine, and have formed very favorable opinions respecting its usefulness and good qualities. More information may be obtained by letter addressed to the inventor.

### Cure for Hydrophobia.

The season of hydrophobia is at hand, and we shall doubtless be called upon to chronicle, ere long, the deaths of several fellow beings by this most torturing horrible malady. Half a dozen specifics for its cure have been given to the public from time to time. A correspondent of the "National Era" writes from Milbury, Mass., as follows:—

"I am now in my 80th year, and have obtained what information I could, both from observation and study. It has lately been discovered, that a strong decoction made of the bark of the roots of white ash, when drank as a medicine, will cure the bite of a mad dog. This, undoubtedly, is owing to the fact that rattlesnakes can be made more easily, to crawl over live fire coals than white ash leaves; and they are never found in the forests where the white ash grows Would it not be advisable for druggists in our large towns and cities to keep constantly on hand a medicine prepared from the roots of the white ash! It might be the means of saving some valuable lives from a sudden and painful death."



# MISCELLANEOUS.

### "Crystal Palace" Exhibitions.

We have frequently alluded to the position of American inventors and exhibitors, with regard to a World's Fair, as projected and conducted by the "New York Crystal Palace Association;" so far from discouraging the exhibition of works of industry and ingenuity, the Scientific American has ever been the advocate of all such exhibitions, which which have for their primary object the advancement of science and the diffusion of knowledge among manufacturers and artists throughout the country. It is well known to our readers that the history of the Crystal Palace and World's Exhibition in America, has thus far been any thing but creditable to our countrymen; but now, as we find it nearly complete, we hail it as the temporary repository of the products of our own and other nations —which deserve a more extensive edifice for their exhibition. A large number of persons from various foreign nations as well as our own country, will assemble with the works of their ingenuity, and doubtless there will be much that is grand, much that is beautiful and interesting; still it is inferior in extent to what a a World's Fair in America should be, and it cannot properly represent the enterprize and spirit of the age. The Palace in many respects is ornamental, tasteful, and in deed beautiful; it is well supported and bound together by the requisite number of braces and ties; and we may say, if there has been an error in the amount of material used, it appears to be upon the side of safety. Its diminutiveness is its greatest fault. It presents a striking contrast, particularly in form and style of architecture, when placed, as it is, by the side of the old Croton Reservoir—the history of which is familiar to many of our readers.

A great number of articles intended for the Exhibition have already arrived. England, France, Germany, Sweden, and many other European countries are already represented by their products. Italy has sent some choice works of art, the most important of which are statuary, sculpture, &c.,—a few of which will be presently noticed.

Men who are accustomed to see only the productions of their own skill, or that of their neighbors, are too apt to be overpowered with the magnitude and display of the various and wonderful improvements of the age; the beauties, the novelties, and the ingenuity of the articles exhibited, are shown to the best advantage, while it is frequently the case that the defects and imperfections are overlooked. It will be the business of the Scientific American, in the extended and careful examination of all the articles of interest or utility to our readers, which shall appear during the coming Fair, to represent every thing, as far as possible, in its proper light. The defects and imperfections will not be concealed, nor the useful or beautiful overrated. We shall not assume that we, as a nation, are nearly perfect, that we have arrived at the line which is the legitimate boundary of American enterprise and genius.

We believe that successive ages may ridicule many of our boasted improvements: the idea may be humiliating, but it is nevertheless true. We should not form too exalted an opinion of our own skill,—it retards progress, and clips our genius and perseverance; inventors and scientific men, in order to bring anything of great value from the hidden storehouse of nature, must not follow in the old beaten track, and content themselves with admiring the wisdom and ingenuity of their predecessors, but they should strike out in some untried path—master what is already accomplished in their own province of improvement, and from this point make a bold stand for higher attainments, and for more complete mastery over the difficulties which prevent success in their own sphere of action. The great object of industrial exhibitors is to present to the world the best methods of effecting the changes in natural products, which prepare them for the use and comfort of man, as well as to instruct and interest his mind—to show the world what has already been accomplished in the different departments of industry, and call forth the spirit of invention, and study to devise new schemes for supplying our wants. It will be of little utility to our readers to describe minutely the many specimens of taste and beauty exhibited in sculpture, painting, and similar works of art; a passing notice is therefore all we shall give. Such works often impress the beholders with varied sensations, and are striking or beautiful in proportion to the skill and taste of the artist by whom they were executed, but to admire them or feel the emotion they produce, we must see them. These specimens are among the first which have appeared at the palace. The statue of General Washington, by Marochetti, is appropriately placed in the centre of the palace upon a high pedestal immediately under the dome. The statue of Daniel Webster by Carew, a young English artist, is already unpacked, and is to be placed upon its pedestal in the south nave. The "Amazon," by Kiss, which attracted so much attention in the London Exhibition, is also in its place.

As above stated, the Italian Department will make a fine display, a large number of specimens have already arrived, among which is a painting by Guercino, representing the Deity contemplating the world, which is supported by an angel. A magnificent oil painting, by Vincenzo Salgetti, representing columbus, at the convent of Della Rabida. "The Battle of the Centaurs;" "The Passage of the Alps," &c.; among the works of sculpture, some of unusual merit, have appeared; "The Flora of the Capitol," a group of Cupid and Psyche, from the original, in the capitol at Rome, by Thorwaldsen; busts from the antique, of Jove, of Diana, of Apollo, &c., groups in statuary marble, by Canova; in this department of art a large collection is being arranged for exhibition. There is frequently a false applause and admiration for works of this description, which should not be favored by our enterprising and original people, these antique productions should be regarded with a degree of veneration, but only in those instances when they teach a good moral lesson.

### Colored Signals.

The railroad accident which took place at Norwalk on the 6th of May was occasioned by the engineer not recognizing the signal of danger—a red globe—which, according to the testimony taken, was no doubt displayed.—Now, as the engineer affirmed, we believe he did not see it, and we believe this very fact should be the subject of equiry. On page 291 we published a short article bearing on this very question. A number of serious accidents which took place in France and England on railroads, caused by engineers mistaking colored signals, have resulted in enquiries made as to the causes, and it has been ascertained that there are many people afflicted with Daltonism, or color blindness (chromatopseudopsis) that is, they cannot distinguish the difference between colors. Now before any engineer should be employed on a railroad using colored signals, his capacity for distinguishing colors near and at a distance should be faithfully tested. We are not acquainted (and never have been) with any individual who has been afflicted with color blindness, but while conversing recently with a gentleman on this subject, he told us that he was acquainted with three different individuals, who could not tell the difference between green and blue, red and yellow. One of these, he said, was a dry goods merchant, who had all his goods marked and ticketed with the names of their colors. Professor Kelland, of Edindurgh, out of 150 students found three who could not discern the difference between colors. Red and green colors appear to be the most difficult to distinguish and recognize; this is false vision, and no one is fit for duty on a railroad who is afflicted with such an optical defect. It may be cured, we think it can, but not total color blindness. Our object is to direct particular attention to this subject, in reference to the capacity of those employed on railroads on which colored signals are used.

### Mechanics Fair in Boston.

The Massachusetts Charitable Mechanic Association are taking active measures to have the seventh Exhibition of the Society exceed the previous Fairs held under its auspices. The Exhibition will take place in Faneuil and Quincy Halls, in September. It will be continued from Wednesday, September 14th, to Saturday, October 1st. The managers have issued a circular soliciting all mechanics, manufacturers, artists, and inventors in the country, to offer for exhibition and premium all works of art calculated to promote the interests of mankind.

### An Iron Ship.

The Evangeline, an iron ship, has arrived at New Orleans from Liverpool. The "Picayune" gives the following description:—

"Her entire hull, with the exception of the deck planking and some ceilings, is of iron. The ship timbers, as well as the sheathing, are entirely of iron. The knee timbers are all of iron, not thicker than one's thumb, and so narrow and graceful as to look more like ornaments than the solid substances they are to so immense a fabric. The lower deck has, in consequence, a vast increase of light and space, which it is difficult to appreciate without seeing it. The main and foremasts, also, are of iron up to the crosstrees, the topmasts, &c., being wood. These masts are hollow, and so spacious that a man can pass up in the inside. They are used as ventilators for keeping the air below fresh and pure. The water tanks of the ship are also of iron, and are situated in the keelson; they are capable of carrying 3,000 gallons, and are divided into three separate air-tight compartments, each of which is communicated with by a separate pump. The whole arrangement is unique, and the economy of space for burden is very great. The ship measures 1,000 tons, and cost $100,000.

### The Flying Cloud.

This fine clipper ship has performed a prodigy of speed, as will be seen by the following extract from her log, received from her Captain, J. Crossey, who was spoken at sea by a New London vessel on the 15th of May, in latitude 1 S., longitude 34 03 W.:—

"Wind light—fine weather; middle and latter part faint and squally. Civil time, this date, 15th of May, at 8 P. M., crossed the equator in lon. 34 20, seventeen days from Sandy Hook, or 408 hours, averaging nine knots for every hour at sea. Passage shorter than ever made. Whole distance run, on straight lines from noon to noon each day, is 3,672 miles. No time since leaving have skysails been off the ship for over three hours, and that only in one instance."

Lieut. Maury mentions several clipper ships that have approached this performance, but none that have equalled it. The Sea Serpent, in March, accomplished the distance in eighteen days; the Flying Fish and the Samuel Russell, in November, each in nineteen days."

### Mesmerism and Archbishop Whately.

At a meeting of the Dublin Mesmeric Association, the Archbishop of Dublin, who presided, observed, "that he was aware he had placed himself in a position which would draw upon him much obloquy and ridicule, but he also believed he had shoulders broad enough to bear it." He also observed "that he was a living monument of the truth of mesmerism; for when the doctors had done their best, or worst, as it might be, he was advised to have recourse to mesmerism as a last resource. In the course of one week he was perfectly cured, and has since never experienced any severe return of the complaint."

### The Potato Rot.

Professor Bollman, a Russian Councillor of State, has published a work on the prevention of potato rot. He discovered, accidentally, and has subsequently verified by experiment, the fact that seed potatoes, thoroughly dried, will produce a sound crop. The paper which gives an account of this discovery, says:—

"The temperature required to produce the desired result is not very clearly made out. Mr. Bollman's room, in which his first potatoes were dried, was heated to about 72 degs.

By way of experiment, he placed others in the chamber of the stove itself, where the thermometer stood at 135°.

### The Pennsylvania Polytechnic College.

The Trustees of this recently chartered institution, have secured a fine building for their purpose in West Penn Square, Philadelphia, and a professor for the chemical department has been elected. Suitable professors, we believe, are still wanted for other departments, such as mineralogy, engineering, &c. The objects of this institution are very excellent, and the people of Pennsylvania should give it a most liberal patronage.

### Terrific Storm.

On Friday evening, at 5 P. M., the 1st of July, a most terrific thunder storm accompanied by an awful hurricane and severe hail, visited the upper part of New York City, crossed the East River, and visited the city of Williamsburgh, where its destructive effects were most disastrous. In New York a number of buildings were blown down, and we understand that not a few persons lost their lives. In Williamsburgh the steeples of three churches were blown down, a number of houses were destroyed, and the extensive ropewalk of the enterprizing Thursly, together with two others, were completely destroyed scarcely a house in the city escaped without seme injury. Some of the hail stones which fell were as large as hen's eggs. The steeple of Dr. McLean's church fell on a house opposite, and crushed it completely, and the steeple of Mr. Porter's, (Dutch Reformed) fell upon the house in which Dr. McLean resided, his church needs the aid of those whose hearts feel for the unfortunate.

The Crystal Palace in New York, and the Latting Observatory stood the storm well; very little damage was done excepting the prostration of the machine room which was fitting up at the side of the Palace. The beams were not secured, and although the posts and girders were all of iron, they were swept down like stalks of dry grass. Old people in this city say that it was the most severe storm of wind and hail they ever witnessed. The day was very hot, previous to the storm; it came up very sudden. During the past week not a single evening but one passed away in this city without a severe thunder storm.

### Sugar, Honey, and Bees.

The editor of the "Plow, Loom, and Anvil," answers our remarks about sugar as food for bees, and the amount of product in honey derived from it. He says he tried the experiment, the best way, himself, and found that two pounds of honey was not produced from one of sugar as food. We commend an article on this subject in another column to his attention. It speaks of the quality, we alluded not to that.

### A Good Salve.

Take white turpentine, or white rosin of any kind—beeswax—mutton tallow—fresh butter, or hogs lard—verdigris—olive oil—oil of amber—oil of spike—of each one ounce.

Melt the beeswax, tallow, rosin, and lard; then take the vessel from the fire and put in the oils, and just before congelation commences put in the verdigris, and stir till perfectly congealed. The verdigris must be perfectly pulverized.

### Lead Pipes.

The controversy once apparently settled—whether or not the croton water of New York acts upon lead pipes, has been renewed.

### The Parallel.

During the year 1852, of 89,135,729 railway passengers in Great Britain, 216 were killed, and 486 injured. During the same year, in the State of New York, of 7,440,653 passengers, 248 were killed, and 268 injured.

### Copper Machinery.

John Otto & Co., of Buffalo, N. Y., wish to obtain estimates for sheet copper rolling machinery and smelting works. Some of our readers may be able to give the desired information.

### Notice to an Inventor.

If Wm. H. Robertson, of New London, Conn., who secured a patent in 1846, for an improvement in mattresses made of cotton, will address a few lines to this office, he will hear of something to his advantage.

A prize of $500 has been offered by the merchants of the New Orleans to the master of the vessel, that between the 15th June, 1853, and the same date 1854, shall make the quickest run from the mouth of the Mississippi to Liverpool.

(For the Scientific American.)

**Atmospheric Circulation.**

The earth on which we live is surrounded by a fluid called air or atmosphere. This fluid is kept constantly in a state of motion by two classes of causes that act directly or indirectly in producing what we term winds. These two classes of causes are separate and distinct from each other, and form two system of atmospheric circulation that are likewise unconnected and independent of each other.

It is not my intention at present to give an analysis of the principles upon which the effects or these causes depend, but I shall endeavor to investigate the results according to a new theory of atmospheric circulation, which I believe to be a true one, based in part on laws heretofore unknown.

It has been proved, and is generally admitted that there are are belts of high and low barometer on different parts of the globe, or places where the barometer stands constantly above or below the mean. These belts extend parallel to the equator, and are variable to some extent with the seasons. That is, as the sun declines to the southward, their movement is gradual in that direction, and when the decline is to the north, their travel movement is also northward. Therefore it may be said that they move with the sun. But this movement is so insignificant when compared to the velocity with which another class of waves travel, that they may be considered as stationary, and reterable to a system of circulation peculiar to their own, or, if connected with any other, it is by analogies of the remotest kind, that are hardly admissable in the present condition of science.

There is certainly a belt of low barometer on or near the equator, and one of high barometer about latitude 30°, on each side, and then theoretically, there is a belt of low barometer again in latitude 70°, north and south, and a region of high barometer near the poles. The attendant winds of these barometric belts of atmospheric pressure prevail with great regularity, and in consequence of the facilities which they afford for carrying articles of commerce from one conntry to another, they have been termed "trade winds."

According to certain laws, the air along the equatorial line is constantly ascending, and the barometer there, indicates diminished pressure in consequence of the upmoving tendency of the particles of air and vapor. This ascending current passes in the upper regions of the air, north of the equator, northward, and south of the equator, southward, and as the upper northward current approaches the tropic of Cancer, or belt ot high barometer north of the equator, it comes in contact with an upper current returning from the northward. Here both currents descend, causing the barometer to stand above the mean, and appear as surface currents—the one blowing in towards the equator as a north-east wind, and the other continuing on to the north-east as a surface wind—arriving after much disturbance at latitude 70° north; it there ascends in that belt of low barometer, passes northward, and comes down near the north pole, and is again a surface wind, setting in towards the south-west and the belt ot low barometer about latitude 70°, where it again ascends and continues on to the tropic of Cancer in the upper regions of the atmosphere—descending there, and setting in for the equator as a surface wind, blowing from the north-east. Having arrived at the equatorial belt of calms, it ascends and continues its circuit to the south pole—descending at the tropic of capricorn, and ascending in latitude 70° south, then settling down near the south pole, it returns to the equator, appearing as a surface wind from the south-east to latitude 70° south, then as an upper current to the calm zone of capricorn, where it once more descends and reaches the equator as the south-east trade winds.

Having briefly alluded to one system of atmospheric circulation, which is of itself sufficient to convince any one that the winds in their circuits are governed by a regular system of laws, and that we may know from whence they come and whither they go; yet there is another system demanding our attention, which, if possible, is more magnificent and stupendous than the first—more complicated and important to the interests of mankind; but no less subject to physical laws.

From a knowledge of the nature of the phenomena dependant upon this system of atmospheric circulation, and from an acquaintance with the laws by which they are governed, I find that there are a number of atmospheric influences that travel around the globe from west to east, with a velocity constantly varying from less than 700 to more than 1,000 miles per day, and that these influences coincide nearly or exactly with those travelling disturbances, which may be termed the waves of the atmospheric ocean. From a long and tedious investigation of the facts involved by the theory, I have been enabled to trace the most of them to their proper causes, and to calculate their velocity of movement on given days, and time of passage over certain places.

Unlike the parallel equatorial belts of atmospheric pressure, that remain nearly stationary, they travel with an astonishing velocity to the eastward, passing around the globe sometimes in less than two weeks. The one being connected with a tropical interchange, and the other with a series of phenomena that accompany storms between the tropical belts of high barometer, and the belt of low barometer near the latitudes of 70°.

The oscillations of the barometer connected with the passage of atmospheric influences over a place, are more or less decided according to the remoteness of the place from the parallel equatorial belts; therefore there is a gradual increase of fluctuation from these belts to the central line of the intermediate belts of symmetrical storms. From the tact that these influences are the effects of separate and individual causes, it is inferred that their action is respectively independent, and peculiar to the relation which they sustain to each other; and that their difference of velocity causes them to approach, recede, or travel together; producing the varieties of weather so multifarious in shade of resemblance, but never the same. Hence the changes of the weather are momentary, and while a variety is passing us, its return need never be looked for again.

An atmospheric disturbance, or wave, coinciding with an influence, as indicated by the barometer, is formed by an ascending current of air, and an increased depth of atmosphere, rain, and gloomy weather follows; in consequence of which there are two descending currents, one on each side of the region where the air is ascending, and the barometer shows diminished pressure. In these descending currents, the sky is generally clear with a prevalence of fair weather. In the ascending current, the latent caloric of elasticity, and sometimes that of fluidity, evolved by the condensation of vapor into cloud, rain or snow, passes to the eastward, and is carried down by the descending current in advance of the storm, causing an increase of temperature at the surface of the earth. This warm and moist air is drawn into the region of the storm, and in ascending there, it comes in contact with the cold and dry current that rushes in from the westward—mingling, or the one passing through the other, they ascend together, and a calm ensues, constituting the central line of an atmospheric wave. The laws by which this phenomenon is governed are such, that while the saturated air moves before the storm, the cold and dry air flows back, diminishing the temperature of the region over which the storm has passed.

On account of the ever-varying position of the influences, and of their specific relations, the disturbances of the atmosphere are more or less constantly changing, inasmuch that, at one time, there is an augmentation of the facilities for condensation, and then again in certain positions, the counteracting tendencies manifested interfere with the cause of condensation to such an extent, that the precipitation of rain or snow cannot take place;—sometimes, also, especially in summer, when the clouds are more dense, and storms more local, rain cannot be expected every where on the passage of an influence, partly in consequence ot the disturbances being somewhat separated and passing in different parts of the country, and partly on account of the velocity with which the influences move.

There are invariable signs which indicate the approach of atmospheric waves or influences. That peculiar variety of cloud, the "cirro cumulus," is seen advancing slowly but steadily from the west or north-west; the wind sets in from the east or south-east, gently at first, but increasing as the storm approaches, and the barometer falls gradually. In the absence of the "cirro cumulus," the cirrus cloud may be regarded as the forerunner of the storm. The "cirro cumulus" denotes a falling barometer, and as it is generally formed in a region of air intermediate to a high and low pressure, its peculiar texture is probably caused by numerous ascending and descending currents, alternately arranged; while the first formation of the cirrus may be referred to a more general uprising ot the air, and as this up-moving current increases from a nearer approach of the advancing power, the cloud grows thicker—veiling, first, the western horizon.

As there are signs foreshowing the approach of a storm, likewise there are those by which we are assured of its passage.—While the central line ot an atmospheric wave is passing an observer, the wind changes to the westward, the barometer beginning to rise, and the particles of cloud commence dissolving into transparent vapor by the caloric of compression from increased pressure, as conversely the vapor in an ascending current is condensed into cloud by the cold of expansion from diminished pressure.

The following table is given with a view of having the theory of atmospheric circulation as given in outline above, fully tested in every part of the country. It is not expected that the calculations will have an exact correspondence, or that there will be an exact coincidence between the caculations and the atmospheric disturbances, for the precision required in the computation of a time so complicated as that maintained by the movement of the waves of the aerial ocean is of such importance, that the slightest error would materially effect the result; the many causes also that effect the movement of storms would likewise prevent their correspondence with the calculations to the same extent. Then, as the calculations are merely approximative, an occasional variance may be anticipated; but these variances cannot be extensive, and whenever they do occur, they must be considered as errors of computation, or exceptions and not as errors of theory.

A Table of Meteorological calculations made for long. 6° west from Washington, for the year 1853, showing the time of passage of atmospheric influences; also, their average velocity in miles per day:—

| Time of passage. | Velocity. Miles. | Time of passage. | Velocity Miles. |
|---|---|---|---|
| Jany. 3, 10 p. m. | 655 | June 30, 8 a.m. | 818 |
| 6, 0 a. m. | 982 | 30,10 a.m. | 992 |
| 8, 5 " | 873 | July 10, 3 a.m. | 794 |
| 14, 2 " | 766 | 17, 2 " | 1053 |
| 23, 10 " | 988 | 17, 9 p.m. | 976 |
| 28, 8 p. m. | 839 | 21, 3 a.m. | 551 |
| 30, 7 " | 634 | Aug. 1, 6 a.m. | 737 |
| Feb. 4, 4 " | 840 | 2, 1 p.m. | 1054 |
| 10, 5 a. m. | 994 | 4, 9 p.m. | 959 |
| 18, 9 p. m. | 812 | 10, 6 a.m. | 892 |
| 25, 5 a. m. | 908 | 19, 0 a.m. | 1055 |
| 26, 2 p. m. | 668 | 23, 6 a.m. | 899 |
| 27, 4 p. m. | 989 | 24, 7 p.m. | 716 |
| Mar. 12, 9 a. m. | 787 | 29, 5 p.m. | 905 |
| 16, 7 a. m. | 936 | Sept. 3,11 p.m. | 1055 |
| 17, 7 a. m. | 984 | 11, 6 a.m. | 866 |
| 26, 6 p. m. | 749 | 17, 5 p.m. | 918 |
| April 3, 7 a. m. | 782 | 18, 4 a.m. | 695 |
| 3, 7 p. m. | 964 | 21, 3 a.m. | 1026 |
| 3, 11 p. m. | 956 | Oct. 2, 1 a.m. | 822 |
| 15, 9 p. m. | 750 | 6, 1 p.m. | 924 |
| 21, 9 p. m. | 979 | 8, 3 a.m. | 995 |
| 22, 3 a. m. | 944 | 12, 6 p.m. | 708 |
| 25, 3 p. m. | 776 | 23, 7 p.m. | 742 |
| May 6, 8 a. m. | 851 | 25, 9 a.m. | 921 |
| 9, 7 a. m. | 994 | 25,11 p.m. | 964 |
| 10, 7 p. m. | 932 | Nov. 5, 1 p.m. | 747 |
| 17, 9 p. m. | 781 | 13, 5 a.m. | 918 |
| 25, 4 p. m. | 946 | 13,10 a.m. | 882 |
| 26, 5 p. m. | 1003 | 16, 5 a.m. | 688 |
| 29, 7 p. m. | 857 | 28,10 a.m. | 810 |
| June 9, 3 a. m. | 784 | Dec. 2, 1 a.m. | 911 |
| 13, 0 a. m. | 998 | 3, 2 a.m. | 840 |
| 15, 0 a. m. | 981 | 11,10 a.m. | 655 |
| 19, 0 a. m. | 826 | 19, 8 p.m. | 860 |
| 30, 4 a. m. | 1016 | 21, 2 a.m. | 909 |

The time of passage of all the atmospheric influence known to exist, are not given in the above table, but it will be observed from the calculations that are made, that the average velocity of storms for the year will be about 36 miles an hour. Thus proving by theory what has heretofore been proved by observation—placing its correctness beyond a doubt, and adducing evidence in favor of the theory that cannot be controverted or set aside.

JOEL HALL.

Athens, Ill., June 16, 1853.

(For the Scientific American.)

**Feeding Bees.**

In No. 40, Vol. 8, of your valuable paper, I discover you again state that bees make 2 lbs. of honey from 1 of sugar, and I have seen it stated by scientific men, and men of note in the world, that bees would convert sugar or molasses, &c., into pure honey. Now I wish to state that the idea is wholly erroneous.—You have no need to "revise your chemistry," so far as quantity is concerned.

The best food for bees, aside from honey itself, is a thick syrup made of refined loaf sugar, of which a middling sized colony will remove from three to four lbs. in 24 hours, let this be done in the fall season, and three months thereafter examine the comb into which it is placed, and you will find pure grained loaf sugar instead of honey—and just the same result will be found by feeding your "six cent brown sugar." Take 1 lb. of brown sugar and make of it a syrup, and when taken into the hive it will weigh two pounds heavier than it did before the feeding, but there is not two pounds more honey, but two pounds of syrup placed in the comb, and upon examination three months thereafter it will be found to be grained sugar; but the same colony will not remove but little over half as much of this as they will of the loaf sugar. But the best feed is the honey itself. I have known a large colony to remove from 6 to 8 lbs. of honey from pans in twelve hours, thus you may see from the quantity of syrup taken up, it is impossible that it should undergo any considerable change in the stomach of the worker. A bee will fill its stomach from the pan in from 30 to 50 seconds, and empty it in less time, hence it is evident that the whole theory, with regard to the capacity of the bee to change the nature of the substance taken into the honey stomach or sack is false, and to show you the confidence I have in the truth ot the above statement, I will agree to give $100 for a stand of bees that will convert sugar into pure honey, such as they get from white clover or flowers in general.

H. L. EADES.

Union Village, Warren Co., Ohio, 1853.

**American Silk.**

At Newport, Ky., opposite Cincinnati, there is an unpretending silk factory, which will hereafter be memorable in the history of American industry. It is carried on by Messrs. Jones & Wilson, who employ some half dozen or more laborers, with five looms and some 150 spindles, consuming annually several hundred weight of raw silk. The manufacture is directed by Mr. Wilson, while Mr. Jones, who is of the Quaker persuasion, and is universally known as Friend Jones, sells the products. These are pocket handkerchiefs, cravats, vestings, and plain and plaid dress silks. As far as possible raw silk of American growth is used in the factory, but the imported article has to be relied on to make out a supply. The raw silk raised in Ohio, Indiana, and Kentucky, when tolerable care is used, is not surpassed by any in the world, being equal to the best Italian. This is owing to advantages of soil and climate, which imparts peculiar lustre and strength of fibre, and cannot fail, in time, to make the United States one of the greatest silk growing countries in the world. For the best native-reeled silk they pay $5 to $5 50 per lb., while the price of the best imported does not exceed $4 50. Mr. Jones has been engaged in this enterprize some eleven years, and has pursued it steadily through the discouragements incident to the beginning of a novel manufacture. His means not allowing of great expansion, he has himself gone about retailing his wares, and enlisting friends for the enterprize. At the same time, by care and perseverance, the goods have been greatly improved.

# NEW INVENTIONS.

### New Rock Drill.

George Stancliff and Robert J. Gaines, of Middletown, Conn., have made an improvement in the construction of drills for drilling rocks, &c., they are a very simple and efficient article for common use. The drill is made in the form of a chisel with a long vertical square stem, which has ratchets or notches upon each side of it, by which it is raised. Two clutches or inverted palls hung in a clutch box which is operated by a long forked lever, catch the stem of the drill where it passes through the said clutch box, and raise it until the opposite end of the clutches meet the incline of a wedge-shaped recess projecting below a cross beam in the frame of the drill. Upon the top of this beam is a ratchet wheel, and the drill rod passes through a square opening in its centre; a gradual motion is given to this wheel, and consequently a gradual rotary motion is given to the drill by means of a pall, which is operated by a vertical rod worked by the lever which raises and lowers the drill. Measures have been taken to secure a patent.

### Machine for Cutting and Sawing Bevels.

A machine for cutting and sawing bevels of every description has been invented by Alfred C. Cook, of Russelville, Ky. The nature of Mr. C.'s improvement consists in making the bed or platform upon which the plank or board to be cut is placed, so that it will vibrate to give the required bevel. If it be desired to adjust the position of the platform to any particular mitre or incline, it is readily done by means of an index plate set vertically at the end of the platform. By means of a metallic pointer upon this index a bevel of any required number of degrees may be given to the platform taken in connection with the saw, which is hung in the stationary part of the frame which supports the bed piece. Any required taper lengthwise, may at the same time be given to the board cut, by adjustable guide pieces, or side rails, attached to the saw bed. The inventor has taken measures to secure a patent.

### Machine for making Nuts and Washers.

There has been considerable difficulty in producing a machine by which nuts and washers may be made rapidly and well. A great number of these articles are used, and therefore a machine which shall make them with dispatch is needed. D. Howell, of Louisville, Ky., has invented a machine like this, for which he has made application for letters patent. The mandrel in this machine is moved by eccentrics upon the driving shaft of the machine, it works very rapidly, and cuts the nuts and washers, and punches the holes by the same operation or motion to the mandrel. The iron is fed to the machine in a heated state, and the nuts are deposited by the action of the machine in a receptacle provided for the purpose.

### Grain Harvesters.

J. Faber, of Farmer's Hill, N. Y., has taken measures to secure a patent for an improvement in the above. The invention relates to a mode of hanging the cutter bar to a swing or balance frame hung loosely upon the axles of the two wheels, whereby the cutters may be elevated above the ground sufficiently to pass any obstruction which may interfere, or to pass inequalities of surface; two sets or series of cutters are employed upon two cutter bars, and the teeth being triangular or saw-shaped, operate like shears upon each other. The cutter bars are thrown in and out of gear with the driving wheel, by a very simple arrangement placed upon the top of the balance frame, which is under the control of the driver.

### Improvement in Machines for Harvesting Grain.

A new machine for harvesting grain has has been invented by James N. Wilson, Isaiah Marsh, and George Kirk, of Waukegan, Ill. In the construction of this machine several important features have been observed by the inventors. Among them is a mode of preventing the teeth or cutters from becoming clogged by leaves of grass, &c.; this is effected by making the fingers, through which the sickle or cutter bar slides, open upon the top, and adding a set of small clamps to keep the cutter bars in their proper place. Several other alleged improvements are introduced, which cannot be properly described in this place. Measures have been taken to secure a patent.

### Improvement in Moulds for Casting Type.

A very good improvement in moulds for casting type, has been invented by Charles Muller, of this city. Several improved features are added to the form of moulds in common use, among which are those of placing the mould below its axis of oscillation, instead of in its usual position above. By this change of position the mould is hung, at a proper distance from the opening through which it receives the melted metal, its tendency toward its centre of gravity will act in opposition to the momentum it acquires in its oscillation, and will thus reduce the force of its concussion against the nipple, which concussion is often injurious to the machine. This change of position admits of a reduced movement of the moulds from the nipple, and also a reduced degree of opening to release the type from the mould. The decreased movement of the metal does not give it so great a momentum, and thus also tends to reduce the concussion, other new arrangements are added which cannot here be particularly described, among them is a very simple combination of mechanism for opening the mould, and a new mode of working the matrix. This forms a very complete machine. Measures have been taken to secure a patent.

## GARDNER'S STEAM ROCK DRILL.

Figure 1.

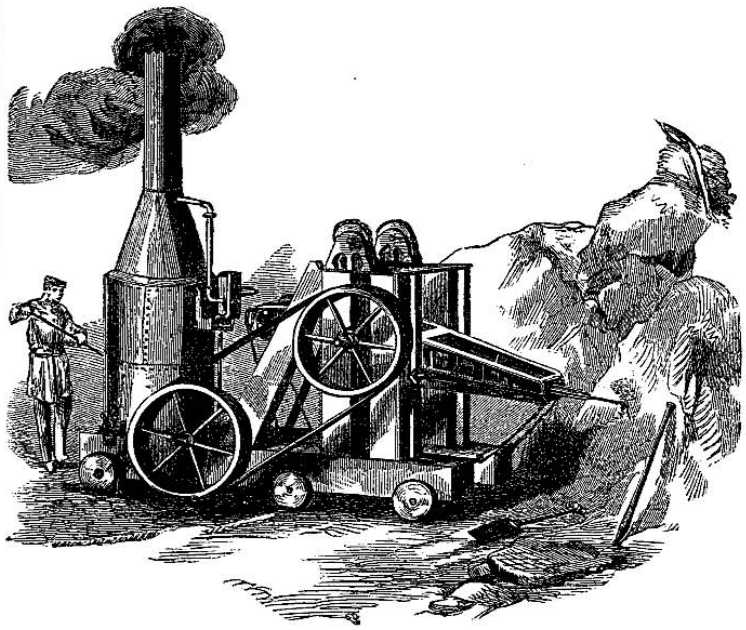
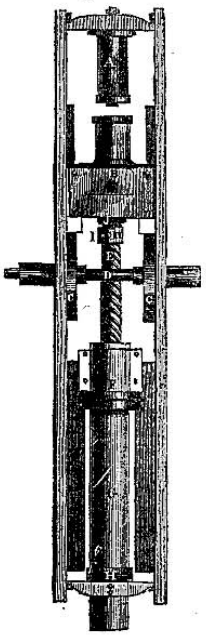


Figure 2.



The annexed engravings represent a rock drilling machine used for thorough-cuts on railroads and for other purposes; G. Arthur Gardner, Trinity Buildings, New York, is the patentee, to whom applications are to be made for machines and rights, for thorough-cut drills, wedge-hole drills, tunnelling machines, &c.

Figure 1 is a view of the whole machine in perspective, and fig. 2 is a top view looking downward, of the swinging frame, which holds the drill, being detached from the machine, and represented upon an enlarged scale. It drills horizontally, vertically, or at any angle with the horizon. The part shown in fig. 2 it may be seen, consists of a stout cast-iron frame playing by two trunnions in two iron boxes, which are raised or lowered (and there securely fastened on each side by a large nut and bolt) between the uprights on each side of the platform; chains from each of the four corners of this frame (called the "swinging frame,") hooked to staples on the platform hold the frame at any inclination desired.

By means of the band wheel (fig. 1) the shaft which bears it, passing through the trunnions mentioned, is rotated, turning at the same time the cam wheels (C C, figure 2): these cams press against pins fastened securely to, and protruding from the lower side of the cross-head, B; thus, as they turn round, they push the cross-head, B, back. A is an india rubber spring (with 3½ horse-power; the spring is 14 inches long and 5 inches diameter), which, as the cross-head, B, is pushed up, is compressed by the "plunger" on the upper part of the cross-head, B. This spring is supported by a spindle passing longitudinally through it, and bolted to the upper cross-piece of the frame. When the cams have receded from the pins mentioned, the expansion of the rubber spring drives the cross-head, and all it bears with it, forward with tremendous force, chipping off, with the drill, large pieces of granite or other stone. Attached to the cross-head, B, and turning loosely in it, is a screw, E, passing down through a left-handed screw in the lower cross-head, F. By means of a ratchet wheel, pall, &c., seen at J, this screw is turned slowly, thus feeding forward the cross-head, F, which cross-head bears at its lower side a hollow mandrill, G, into the upper part of which the screw, E, passes. This mandrel has a steel drill at its lower end (fastened in by a set screw), made of such bore as may be desired.

When the cross-head, F, has been screwed down as far as the length of the frame will permit, by means of a straight rack, with a handle, applied to the cog-wheel, I (on the screw shaft, E), the cross-head and drill are ready to commence operation again.

At H, on the mandril, G, is a ring, (with ratchet wheel and pall), and a projection at the lower part of the pall, which slides on a bar (not seen) placed diagonally under the frame, and by this means, as the drill is withdrawn, twisting round the mandril, and consequently the drill. The same simple arrangement at T effects the turning and feeding down of the screw. By means of a sliding bar beneath the frame, the two diagonal bars are connected, and thus, by the simple and easy rotation of a hand wheel (on the sliding bar), the drill is made to feed forward at the rate of half an inch, or less, or even 3 or 4 inches per minute, and the drill to turn at the rate (as desired) of 10, 12, 15, or 18 teeth upon the ratchet to a complete revolution of the wheel.

At the other end of the platform (fig. 1) is placed an upright steam boiler with cylinder bolted to it, with force pump, &c., and band fly wheel. By means of the sheave wheels (seen at the top of the upright standards) a chains passing to the iron boxes (before mentioned) and from there to a shaft running across the braces of the standards, raise and lower the "swinging frame" to any desirable elevation. A great desideratum has been a machine which would bore rocks at any angle with the horizon as well as vertically. This desideratum is accomplished in this machine.

The machine here represented will be in operation at the New York Crystal Palace.

The patentee has also a mode of applying this arrangement to drilling the wedge holes for splitting rocks; the saving of time, and use of the water vial (in consequence of the holes being uniformly straight) must recommend this to all quarry owners; it is applied also in sinking shafts in mines, and must here effect a great saving. A most important application is also made of it to tunneling for railroads, &c.; a small portable arrangement, worked by hand, is used for quarries and mine galleries

Further explanation and information will be given on application to the patentee during business hours, or by letter addressed to him.

### Bathing.

The "Hartford Courant" states that Dr. Kob, of that city, is erecting a suitable building for the accommodation of bathers, and those who desire to learn the art of swimming. It is to be under the charge of a swimming master, and will afford a safe and pleasant resort for those who desire to engage in this healthful exercise. The building erected this year is only temporary—if the experiment succeeds, those of a better and more permanent character will be built.

Swimming should form a part of every childs' education, hence large baths, free public baths, or other appropriate places for learning the art should be provided in every place, where the youth of both sexes in appropriate dress would be able to learn it as something essential to be acquired. In speaking disparagingly of Roman youth it was said, "he can neither read nor swim." There are many good bathing establishments in this city, but none conducted upon the principle of one above alluded to. If the proprietor of the old bath at Castle Garden would adopt this plan we think it would be a decided improvement.

An Englishman has written a letter to the "London Times," complaining of his treatment by those connected with the New York Crystal Palace. He intended to be an exhibitor, and arrived at New York on the 28th April, to be at the opening. No intimation had been given that it would not open on that day, hence the justness of the complaint.

Scientific American

NEW-YORK, JULY 9, 1853.

### Science and the Classics.

Experience is an excellent teacher; her lessons are sometimes stern and severe, but they are always effective. This monitor has entered the halls of the New York University, of this city, and we hope and pray that the wise lessons she has taught will bring forth in due season a rich and abundant harvests of good fruit. The Turks, in a certain sense, may be said to be the civilizers of Europe. When Constantinople fell, and the Greek Empire was overthrown by the Moslem, the learned Greeks who fled to western Europe carried with them that influence which learning always commands from an ignorant people. Shortly after this event many colleges were established in various parts of Europe, and science as then known began to be a favorite study. As everything worthy the name of knowledge was then locked up in the Greek and old Latin authors, a study of these languages was necessary to the acquirement of knowledge. It was therefore demanded as an essential qualification, that every student who entered those colleges should have acquired a certain amount of classic knowledge, and should then finish his studies in them. This system was very well for those days, but is totally unsuited to modern times—since the days of Bacon, and yet, strange to say, all the colleges established in Europe, and those in our own country, until within a very few years, were founded on the same erroneous considerations. For ministers of the gospel, whose duties require of them an acquaintance of the scriptures in the original tongues, it is necessary that they should study the classics; but for lawyers, doctors, engineers, merchants, and mechanics, it would be a waste of time to study them. With the exception of mathematics, all the science of old was mere fable; the whole of the ancient philosophy has been consigned to the tombs since the days of Galileo. The knowledge which men now require to fit them for the occupations of life, with but a few exceptions, is not to be found out of the living languages.

These old colleges are not for a mixed class of students; they are only for the sons of the rich, those who have plenty of money, and whose time is of no pecuniary value,—to such we commend the study of the classics; they both discipline and beautify the mind; but those modern universities which have been established to teach science, such as surgery, physics, chemistry, mathematics, engineering, geology, &c., independant of classical qualifications in the students, have alone been successful because they are suited to the age, and the times we live in. The old conservative colleges resemble deserted rookeries more than seats of learning to teach the multitudinous rising generations. Many of the professors in these colleges know and feel the truth of what we say; their hearts beat in unison with the spirit of the age, and they advocate a change.

The New York University being founded on those wrong old notions, has done some good in giving to the world the electro-magnet telegraph of Prof. Morse, and the excellent chemical works of Prof. Draper; still it has failed to be an instructive institution to our young men owing to its exclusive classic requirements. In twenty years it has only graduated 455 persons, whereas if it was conducted upon a proper system it should graduate as many every year. On the evening of the 22nd ult., Prof. Draper delivered the address on the 21st Anniversary of the alumni; he pointed out the evils we have described, and advocated a change, whereby classes should be established for teaching students in every branch of science independent of classical qualifications, such as in engineering, chemistry, etc. We cannot omit to quote one expression which thrilled our heart. He said:—"I heartily join in the comments recently expressed by an eminent clergyman, and trust that the time is not far distant when we shall see the New York mechanic passing up the stairs of the University, and depositing the tools he has been using behind the lecture room door; the University will then be in fact what it is now only in name, and we will then hear no more complaints about the want of money." We hope Prof. Draper's suggestions will be carried out at no distant date; they meet our views exactly, and we have expressed ourselves on this point often.

### More about Lightning Rods.

The subject of lightning rods is one of great interest to every man and woman in our land, and from the many fatal accidents which have taken place this season during thunder storms, it is exciting much attention at present; of this we are certain, from the number of letters we have recently received on the subject.—There is no saying more common than "doctors certainly differ," and it is just as applicable to the different opinions entertained by different men, respecting lightning rods, as anything else. One considers that a round form of lightning rod, is as good as any other; a second considers a square form the best, while a third looks upon the twisted form as the best of all. One advocates glass insulators for the rods, while another asserts that wooden brackets are sufficient. One advocates a continuous rod like a wire, while another believes the chain or the jointed conductor to be perfectly safe. One says the conducting surface is the grand desideratum, while another says "the solid section is the main object." Out of these conflicting views can anything certain and tangible be adduced for the construction and erection of *safe* lightning rods? We believe there can. The requisites of a good lightning conductor are well known, and the different opinions advanced respecting this and that conductor, refer more to the most effectual conductor which can be made at the smallest cost than to the real scientific merits of a lightning conductor in itself, as it relates to perfect action. A thick iron or copper rod extending above the highest part of a house, continuous in its connection, perfectly insulated, kept separate and distant from any large metallic body, and terminating in a moist part of the earth, such as a pool or well, is a perfect lightning conductor. While we write this, we have before us a model of the lightning conductor of G. W. Otis, of Lynn, Mass., for which a patent was granted on the 26th August, 1851, and which is now owned by L. Lyon & Co., of this city, (Mr. Lyon is the author of a treatise on lightning conductors recently published by Putnam) it is a good and certain conductor, but expensive. There are some, however, to whom expense is but a secondary consideration, and for their benefit we will describe it. The main rod is of iron, square in form, and made in sections screwed into one another, in metal eyes, secured to the binding insulators, which are glass cylinders secured to dry wooden collars that bind them to the building. Each binder terminates in a horizontal point at its extremity; the upper parts of the conductor are composed of many points branching off, and all tipped with gold. The insulation is perfect, and the rod is more nearly continuous than if it were formed in link sections. The use of any non-conducting substance as an insulator is old and well known, and any person who wishes to erect a rod to suit himself, cannot go wrong in his choice of substances, such as ivory, dry wood, &c., nor can he go wrong if he only uses a conductor of a sufficiently large diameter. We believe the round rod is just as good as the square one, and the solid section, not the surface, is the main object.—The most important questions to be asked are, "what is the smallest diameter of rod that will suffice to form a good conductor, and what size of a building (area) will one rod protect." The last question is not easy to answer. Unless the chimneys of a house are very near together, a branch rod should be erected on each, extending two feet above them, and vertical branch points two feet above the roof should be placed within twenty feet of one another. It is no easy matter to tell the size of the least cross section that will answer. E. Merriam, who has devoted much attention to the subject, asserts that No. 10 iron wire is sufficient, and that 100 feet of it can be purchased for one dollar.—Iron wire five-sixteenths of an inch in diameter, is the size used for our large public armed ships, and these have never failed to afford protection to the ship and to all on board.

As copper wire is eight-times a better conductor than iron, we prefer it. It costs only fifty cents per pound, and a good and perfect conductor made of copper wire can be put up for one shilling per foot. Excellent insulators can be made of wooden cleets varnished, painted, or boiled in oil, nailed with iron nails (covered with wax or varnish) to the building, and merely having holes bored in them for the wire to pass through. The copper wire will last ten times longer than an iron one; it should be pointed with a file, and not hammered. We feel no hesitancy in speaking of copper wire as being a cheap and reliable conductor, and we would trust to a section of it not more than three-eighths of an inch thick in preference to an iron wire of at least twice the diameter. There is not a man in our land who cannot erect his own lightning conductor, there being no great amount of science or art required; care and attention, with what we have said on the subject, will enable any man to put up his own lightning rod.

### No Smoke, Chimneys, Boilers, or Coal.

The above is the title of an article by William North, which appeared in a recent number of the "Pen and Pencil," a weekly magazine published in Cincinnati. Mr. North, it seems, one day ascended a hill and looking down upon Cincinnati saw nothing but smoke, smoke, reminding him of London.—Then he says, "I felt a slight glow of pride and said, 'if people would but listen to me, I could with the breath of science blow away these clouds which overshadow and stifle them and save them time, trouble, and money into the bargain—twenty years hence some one who reads this may suggest the idea as novel." Let us present this prodigious scientific and novel idea of which its author feels so proud. He says:—"I propose to dispense with smoke, to make chimneys useless, unless for ventilation. In order to do this I propose to dispense with coal except for the manufacture of gas. Our dinners shall be cooked by hot air stoves; our houses shall be warmed by hot air pipes, and steam shall be generated in our locomotives by hot air furnaces." There is nothing new in any of these propositions, excepting dispensing with chimneys, and he cannot make gas, or heat air without a chimney. Chimneys are used for ventilation now and nothing else, they carry off the products of combustion, and no gas can be made nor air heated without combustion, consequently his views are altogether inconsiderate. Houses are heated now by hot air, and we presented gas stoves and furnaces for cooking and heating, illustrated with engravings on page 32, this volume, Scientific American. He again says:—"Not one-hundredth part of the fuel now used is necessary for an engine." As we understand him then, by hot air furnaces in locomotives, he can make one pound of coal evaporate as much water as 100 lbs. by the present construction of fire-box. This to us is abundance of evidence that he is not acquainted with his subject, and he must breath science more full and free ere he comes before the public next time to instruct the people of Cincinnati in the use of fuel. By the most careful experiments in the laboratory, it has been found that one pound of coke will evaporate twelve pounds of water, and in well constructed locomotive boilers it has been found that eight pounds of water are evaporated by one pound of coke, consequently there is only a loss of one-third of the heat of combustion, and this is easily accounted for by the great radiating surface of the boiler, and leaks; there is no such a thing as 99 lbs. of loss of fuel in every 100 in any boiler. If Mr. North is correct he can prove himself so by evaporating 800 lbs. of water by one of coke, and as he says that he will show any body how to build an engine, if liberal propositions are made, he should first exhibit proofs of the truth of his own assertions, viz., the evaporation of 800 lbs. of water by 1 of coke.

We expect to find a good knowlege of simple combustion in persons who are well read, but we regret to say that we often find it otherwise. There is a very great want of correct knowledge respecting heat, fuel, and combustion. Heat is an active product of combustion; it tends to separate the particles of various bodies with which it comes in contact. Smoke is the chemical product of the semi-combustion of fuel; by perfect combustion, there is no smoke, but carbonic acid gas, a clear vapor. Smoke is carbonic oxygen CO. Carbonic acid is $CO^2$. To prevent smoke in cities the fuel must be supplied with the requisite amount of oxygen to form carbonic acid—no more can be done. Without combustion there will be no heat action; a certain amount of combustion will produce a certain amount of heat action, it is definite, and can only accomplish a definite result perfectly measurable. Some people speak of heat as it it were a spirit of infinite power, independent and uncontrolled by the laws of mechanical science. These laws are immutable; those who understand them best make the fewest blunders.

### Events of the Week.

Cement for Roofs.—Having had several enquiries made of us lately for some good material to put on leaky shingle roofs, such as a cement, we would state that red lead paint, oil, and melted rosin, into which is stirred a considerable quantity of dry sharp sand if put on thickly with a brush, then dusted with sand, ought to form an excellent cement for that purpose. We have not tried it to cover old shingle roofs, but have done so to stop leaks in a tin roof, and have found it to more than answer our expectations. Good white lead mixed with oil and dry sharp sand, will answer as well, but the former composition is cheaper. It is a non-combustable as well as a water repelling cement.

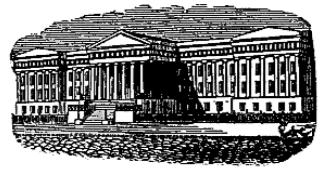
Incrustations in Boilers.—We have received a letter from a correspondent who is not fortunate enough to possess back numbers of the Scientific American, making enquiries respecting the best plan to prevent incrustations in boilers, especially where the water used contains a great excess of lime. Many substances have been specified from time to time in our columns as suitable for this purpose. Blocks and chips of oak, yellow pine, saw dust, soda, the muriate of ammonia, and any kind of dye wood containing tannic acid, such as logwood chips, sumac, &c., have been used with more or less success. To precipitate the water before it is admitted into the boiler, is the best, but this would perhaps be a too costly plan. Oxalic acid is the best substance to use for this purpose, but soda is the cheapest. We recommend our correspondent to use oak block chips, or saw dust, let him put half a bushel in his boiler every week. The wood dissolves entirely in the course of one week in a high pressure boiler; and it is supposed that it combines with the atoms of lime as they are set free from the water, thus forming a new compound which does not become attached to the boiler, but rolls on the bottom, and is driven out through the blow-off cock.

### Cancers, Ulcers, etc.

Dr. Samuel Gilbert, late of Memphis and New Orleans, whose success in the treatment of cancer and kindred diseases in the Mississippi Valley, we have frequently referred to in the Scientific American, has arrived in this city and will resume his practice without delay. He has taken an office at 483 Broadway, three doors above Broome, where he is prepared to treat all sufferers from that terrible scourge—the Cancer—without the use of the knife. Dr. Gilbert has fairly earned his reputation—the cure in his own case is an evidence of what may sometimes result from perseverance while operated upon by dire necessity.

Messrs. Dexter & Brother have removed to their large rooms, Nos. 14 and 16 Ann street, near Broadway. This enterprizing concern deal very largely in newspapers, periodicals, books, etc., they are also importers of foreign publications. Country dealers are always promptly and honorably supplied through them at publishers' prices.

The charge for admission to the World's Fair is fixed at 50 cents—season tickets $10. We have not yet heard how many season tickets have been purchased, but in all likelihood the number is not small.



*Reported Officially for the Scientific American*

## LIST OF PATENT CLAIMS

**Issued from the United States Patent Office**

FOR THE WEEK ENDING JUNE 28, 1853.

REFRIGERATORS FOR COOLING LIQUIDS—By B. H. Bartol, of Philadelphia, Pa. Patented in Cuba, Oct. 8, 1852: I claim the arrangement of the series of partitions and interstices, for cooling water, as set forth.

BOBBINS—By Horatio Clarke, of Dedham, Mass.: I claim the making the bobbin head as described, viz., of a combination of wood and raw hide, or other material having like properties, whereby the head is not only cheaply constructed, but rendered properly stiff and capable of resisting the effects of blows, falls, or wear, as stated.

SHUTTLE BOX MOTION IN LOOMS—By Christr. Duckworth, of Thompsonville, Ct.: I claim the method of giving a three-fold movement (lateral, vertical, and diagonal) to the shuttle boxes, as described, by which I am able to operate any required shuttle at any given pick.

I also claim the apparatus for operating the shuttle boxes, consisting of the case, with its friction rollers and slides, combined with the levers, which work the slides, and the principal lever which moves the shuttle boxes when the whole is constructed, arranged, and combined as described.

MELODEONS—By H. N. Goodman, of New Haven, Ct.: I claim the two sets of reeds with the two sets of keys, when these are combined with the two sets of valves, and so arranged that each set of keys may play their own set of reeds independently, or, so that the lower set of keys may play both sets of reeds (in the ordinary way of two stops), while the upper set of keys may play its own set of reeds only in any other part of the key board, at the pleasure of the performer, when constructed and combined as described.

I also claim the method of coupling or connecting the lower set of keys with the back set of valves, so that both sets of reeds may be played by the lower set of keys, when the several parts are constructed, arranged, and used as described.

TWISTING WAXED ENDS—By D. H. Hovey, of Kilborn, Ohio: I claim the combination of the revolving rollers or tubes, conical coupling cores, the spring tightness, with the detaching levers, arranged and operated as described.

COATING ZINC WITH LEAD—By Edmund Morewood & Geo. Rogers, of London, Eng. Patented in England Dec. 12, 1850: We are aware that metals have been coated, one with another, by washing and plating, to protect them from oxydizing agents, &c., but we are not aware that zinc and lead have ever been united and rolled into united laminæ of each of these metals, as described. Therefore, we claim such a composite sheet as a new and useful manufacture, or article of merchandize, or trade of great value and importance, and which possesses the hardness, stiffness, and strength of zinc, with the capacity of lead, to resist the action of oxydizing agents, as set forth.

BRAN DUSTERS—By L. S. Reynolds, of Indianapolis, Ind.: I claim the employment of the conical roughened metallic scourer, in combination with the double disc rubber, the discs and pins of which always preserve the same relative position, being arranged as set forth.

PERCUSSION PELLETS—By Christian Sharps, of Hartford, Conn. Patented in England April 22, 1852: I claim the percussion pellet, consisting of a quantity of detonating material, enclosed between two flanged discs, or shallow hollow cylinders closed at one end, the open end of one cylinder being fitted into the open end of the other, and the two being firmly interlocked, by crimping together their flanges, rims, or peripheries, as described, so as to form a pellet in the form of a disc.

TUNING MELODEONS AND OTHER REED INSTRUMENTS—By E. E. Shepardson & Edwin Lucas, of New Bedford, Mass.: We do not claim inserting reeds in pipes, or tubes, for that has been previously done, but we claim securing or attaching the reed to a movable pipe or tube, the reed being arranged or placed between stationary clamps, by which, as the pipe or tube is moved the vibrating portion of the reed may be lengthened or shortened and the desired tone obtained, as described.

TURNING IRREGULAR FORMS—By Lauren Ward, (administrator of Richard Ward, deceased), of Naugatuck, Ct.: I claim the combination of the jointed levers, suspended by their upper ends with the crank and connecting rod, when so constructed and arranged as to elevate or depress the inner part of the carriage, and the toothed centre, in such a manner as to give a regular elliptical form to the polygon where the opposite longitudinal sections will be equal and similar when the whole is constructed, arranged, and combined, as described.

I also claim the use of the notched collet, on the toothed cutter, and the carved bar, in combination with the jointed levers, to give regular, and irregular forms to different parts of the same elliptic polygon when the whole is constructed, and combined, as described

METALLIC BOXES FOR PRESSES, &c.—By James Foster, Jr., & Platt Evens, Jr., of Cincinnati, Ohio: We claim the method of preventing the shrinking and binding of metal bushings when cast up on screws, mandrels, spindles, shafts, and the like, by the insertion of feathers either movable or fixed in the boxes to be bushed, for the purpose of separating or breaking the ring of bushing metal, for the purpose set forth.

PRESSES—By Amzi C. Semple, of Cincinnati, Ohio, (assignor to Wm. C. Semple): I claim sustaining the gear frame of a double toggle press, by the toggle arms and joints, independent of and disconnected from the frame of the press, by attaching the same firmly to the nut, as described, in combination with supporting the screw by the nuts thus sustained, only the whole being arranged as described.

THRESHERS AND SEPARATORS OF GRAIN—By N. B. Lucas, of Otter Creek, Ill.: I claim the auxiliary screen, placed in an auxiliary position, or nearly so, and projecting from the rear end of the inclined screen, so as to be out of the axis of the blast over the inclined screen, for the purpose of catching and saving the blighted and lighter kernels of grain which may be blown beyond the rear extremity of the said inclined screen, as set forth.

RE-ISSUE.

GAS REGULATORS—By Walter Kidder, of New York City. Re-issued June 28, 1853: I claim balancing the varying pressure of the gas in the main by connecting with the valve a disc which receives pressure from the main to balance the pressure on the valve, as described, or the equivalent thereof, in combination with the method described of governing the aperture through which the gas passes to the branch of the varying pressure of the gas beyond the valve which governs the aperture, as described, so that when the pressure becomes too great the aperture shall be reduced, and vice versa.

And I also claim, in combination with the above, making the disc so that it shall be also acted upon by the varying pressure in the branch to assist in moving the valve to govern the aperture for the passage of the gas, as specified, whereby the action of the instrument is rendered more sensitive and prompt as a governor.

DESIGNS.

COOK STOVE—By N. J. Vedder, of Troy, N. Y.

COOKING STOVES—By S. D. Vose, of Albany, N.Y. Three patents: ante-dated May 2, 1853.

REGISTER FACE—By James Cowles (assignor to A. G. Bristol), of Rochester, N. Y.

PARLOR STOVE—By S. D. Vose, of Albany, N. Y. Ante-dated May 2, 1853.

### Wood Gas.

The City of Wilmington, North Carolina, is now, for its size, the cheapest lighted city in the United States. The whole apparatus, including mains, gasometers, &c., cost but $18,900. This includes their transportation from Philadelphia, with, also, the pay and passage of workmen. By reference to Ure's Chemical Dictionary, a standard work, it will be found a ton of coal, or thereabouts, yields about 10,000 cubic feet of gas. This is after eight hours' distillation from the best selected coal. By actual experiments it has been found that a cord of wood will produce 93,000 cubical feet of gas. It will be perceived at once this renders wood gas much cheaper. Besides, it is a well ascertained fact that in the production of light the ligneous oils are as 7 to 8 superior to that of coal.—One reason that they have been so little used is, that they require to be distilled from wood previous to use; but this difficulty, it is said, has been obviated by a simple and cheap apparatus, invented and patented by Dr. Mc Connell. This invention places the use of gas within the reach of all rural villages, and will render every one who chooses to be so, independent of the gas companies, for by its means they can manufacture their own gas, at a much cheaper rate than it can now be supplied by any company chartered within the United States. This gas has not the offensive smell of that produced by coal, and can be passed directly from the retort through the washer or condenser to the gasometer without further purification.

This discovery promises to open a new field of commerce; the vast amount of pine in Lower Virginia and North Carolina, now considered of no value, will be brought into market for the purpose of manufacturing gas, and the charcoal left after destructive distillation, will pay the whole expense for manufacturing. Wood can be purchased in North Carolina, and delivered at Wilmington, or in Pamlico Sound, for one dollar per cord; the transportation, &c., would not bring the cost up beyond four dollars. Wood, at five dollars per cord, yields 93,000 cubic feet. An apparatus for manufacturing wood gas could be put up for one-seventh the cost of that for manufacturing coal gas. It is estimated that the city of New York might be lighted for one dollar per thousand feet, and yield a handsome profit to the manufacturers; whereas the city now pays three dollars per thousand. —[Evening Post.

[That good gas can be made from wood is a fact, and one as long and well known as that it can be made from oil, bitumen, and coal. It is also true that a ton of coal produces about 10,000 cubic feet of gas, but the amount which can be produced by a cord of wood we do not know, as one kind of wood will produce more gas than another. More gas can certainly be produced from resin than from wood, and yet gas can be made from coal at a less cost We are positive that no 93,000 cubic feet of good gas can be made from a cord of wood; 1,000 cubic feet will be nearer the mark. We have no doubt but in some places where good resinous, pine wood is cheap, gas can be made economically, but if any of the other woods in our forests is used, we believe its gas will have to be washed with turpentine before it can be made suitable for illumination.

We do not hesitate to pronounce the statement respecting "making gas from wood for one dollar a thousand cubic feet, in this city," a grossly erroneous allegement. A cord of dry pine wood does not weigh 2,000 lbs. (pitch pine 1,904 lbs.) It contains 49·95 carbon, 6·41 hydrogen, and 43·64 oxygen. Good bituminous coal yields 74·823 carbon, 6·180 hydrogen, and only 5·085 of oxygen. As oxygen and hydrogen are very volatile, if they exist in a large proportion in any matter employed for making gas as in wood, it is evident that they will quickly pass off when the wood is put into the retort and not take up the carbon in the wood, which is essential to the making of good gas; the product therefore will be a poor watery gas in comparison with that produced from coal, and besides, there will be produced a great quantity of watery acid, and other matters not fit for illumination. Light carburetted hydrogen, the gas made from coal and used in cities, contains no oxygen, its composition is $CH_2$, and it is the excess of hydrogen in the coal which takes up some carbon (the latter not being volatile in itself, but it is left in the retort) and makes the gas. The excess of oxygen in wood (it not being an element of the illuminating gas) renders it altogether inferior to coal for making gas for cities. A cord of wood, then, cannot produce as much gas as a ton of bituminous coal, and therefore it would be more expensive to use it for that purpose excepting where it is very cheap and coal dear.

It has been found that 12½ parts of hydrogen can combine with as much carbon as 100 parts of oxygen; in wood there are about 10 parts of oxygen to 1 of hydrogen, while in coal there is 1 of hydrogen to ·80 of oxygen. We would therefore expect that one ton of good cannel coal would produce ten times more good illuminating gas than a cord of wood.

### Bearded Civilization.

Beards are very sigularly connected in history with the progress of civilization. The early history of all nations naturally exhibits a bearded-people, for the beard itself is an ordinance of nature. The early Greeks and Romans did not shave. The Greeks began to use the razor about the time of Alexander, who commanded all his soldiers to shave, lest their beards should afford a handle for their enemies. This was little more than 300 years before the Christian era; and, thirty years after Alexander, Ticinius introduced the habit of shaving amongst the Romans.—The Gothic invaders of the Western empire revived the habit of wearing the beard. The Anglo-Saxons were a bearded race when William the Conqueror invaded England, and therefore the Conqueror and his Normans ever after wore the chin smooth, in order to distinguished them from the vanquished; and thus, even in the Norman invasion, the shaven chin became the emblem of an advanced civilization. In like manner, amid all the long controversies between the Eastern and the Western Churches, the Western Church has invariably espoused the cause of the razor, whilst the Greek or Eastern Church as resolutely detends the cause of the beard. Civilization has marched in the west, and remained stationary in the East, in the land of beards. When Peter the Great determined to civilise his Russian subjects, one of the means which he considered indispensable was the use of the razor; he therefore commanded his soldiers to shave every layman who refused to do it himself, and rare sport they had with the stubborn old patriarchs who persisted in retaining their much cherished emblems of age and wisdom. The civilization of the west is decidedly emblemed by the shaven chin; and therefore it seemed an ominous and remarkable circumstance that in the late continental revolutions, the resumption of the beard should have borne so conspicuous and important a part."

[The above is from an exchange, and if the conclusions are correct, we must say that we, as a people, are beginning to retrograde, for if civilization is accompanied by a smooth chin, we can say, that for one bearded man seen in New York, five years ago, there are now fifty. We took the trouble a few days ago to count the number of bearded men that passed our window in a given time, and found that every eighth man was bearded like a *pard*. What the end of this is to be, we do not know, but according to the above conclusions, we should say "the barbarians are upon us."

### Light Houses for New York Harbor.

New York harbor and its approaches are to be adequately provided with light-houses.—It is stated that examinations have been made, under the direction of Mr. Edward Blunt, first assistant coast surveyor, with a view to the erection of six light-houses, and that their location was decided upon, as follows:—Two light-houses for vessels coming over the Swash; two to mark the centre of the main ship channel, and two for Gedney's channel.—All will be constructed upon the most improved manner, and furnished with the Fresnel light. Congress having made the necessary appropriation at its last session, it is probable that the work will go forward at once.

### TO CORRESPONDENTS.

W. D. U., of N. C.—We do not think you could obtain a patent on the improvement in carriage gearing; it contains nothing new, in our opinion.

S. E. B., of Pa.—We think there is novelty sufficient to justify an application for a patent on your machine for softening hides; we approve of the plan and advise you to send a model.

J. R. M., of Ohio—Numberless patents have been granted on washing machines, but we find none like yours; a limited claim, we think, can be sustained.

T. S., of Louisville—We cannot see any difference between the action of your hydrant and the spring hydrant in common use here on Croton pipes. We feel confident a patent cannot be obtained.

J. R. & B. F. H., of Ill.—Your plan to move machinery is simply that of a large clock, the weight of which is wound up by a wind mill or steam power. You cannot get a patent for the plan, nor would it be prudent to put up such machinery.

B. F., of Ohio—Yours of the 20th ult., respecting "Pendulum Balance," has been received; upon your arrival we will attend to your business.

W. C., of N. Y.—We cannot express an opinion in reference to your invention without the aid of drawings and a specification; as you have made your application it is needless now to incur expense.

G. B. C., of Ohio—Our opinion respecting applying wheels on which vessels shall roll at sea, is unchanged; we do not see the least advantage that could be obtained by placing a wheel in the bow of a ship, as shown in your sketch.

W. W. L., of Pa.—We do not know the price of electro-plating apparatus.

H. G. B. H., of Ohio—Use a common lifting pump, it will answer well; you can extend the plunger and valve for 8 feet down, and the water will rise in the vacuum below that (30 feet.)

J. S., of Pa.—We have never witnessed any spiritual demonstration, nor have we ever heard the rappings; we are skeptics, and believe that such transactions are deceptions of some kind. This opinion we shall entertain until we are perverted, an event not likely at present to take place.

G. McC., of N. B.—Many planetariums have been constructed, in which the heavenly bodies moved in eccentric orbits, and with variable velocities; this was the case with Ferguson's. You may have a different plan from others; it is the mode of doing a thing which is patentable.

R. W., of N. Y.—A very good substitute for metallic roofing may be made very cheaply by dipping strong paper in a cauldron of tar and applying it to the roof. After the paper is laid it is better to spread another coat of tar over it with a brush, after which spread over gravel and pebble stones, and let it remain undisturbed until the coating hardens.

W. M. A. F., of Me.—We have no No 4 to send you; we cannot order the book mentioned, it is published in Philadelphia.

R. F. R., of Pa.—There is no novel feature in your alleged improvements in buckets. We have seen the same thing before. The switch is new, but of very little utility in our opinion.

J. Y. R., of N. Y.—Surely you have never put the question to yourself, "what is heat," or you never would have made such statements respecting it.—You must study its effects more closely. The talk about removing all the obstacles to the transfer of heat is exceedingly unphilosophical.

W. L. B., of Conn.—Your question as asked was perfectly understood, and as explained by you is also understood; we now say that "we do know how many revolutions per minute have been obtained from known power." Your question should be more definite.

Money received on account of Patent Office business for the week ending Saturday, July 2:—

A. E. B., of R. I., $225; A. C., of Conn., 30; J. McC., of N. Y., $25; T. J. J., of Pa., $30; J. K. G. & Co., of Pa., $40; L. P., of Vt., $50; G. B. T., of Ohio, $55; A. C., of Conn., $30; T. H., of N. Y., $100; L. B. A., of Pa., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Saturday July 2:—

W. B., of Conn.; C. C., of N. Y., (2 cases); C. A. W., of N. Y.; A. J., of Me; R. O., of Vt.

# ADVERTISEMENTS.

## Foreign and American Patent Agency

**IMPORTANT TO INVENTORS.**---The undersigned having for several years been extensively engaged in procuring Letters Patent for new mechanical and chemical inventions, offer their services to inventors upon the most reasonable terms. All business entrusted to their charge is strictly confidential. Private consultations are held with inventors at their office from 9 A. M., until 4 P. M. Inventors, however, need not incur the expense of attending in person, as the preliminaries can all be arranged by letter. Models can be sent with safety by express or any other convenient medium. They should not be over 1 foot square in size, if possible.

Having Agents located in the chief cities of Europe, our facilities for obtaining Foreign Patents are unequalled. This branch of our business receives the especial attention of one of the members of the firm, who is prepared to advise with inventors and manufacturers at all times, relating to Foreign Patents.

MUNN & CO., Scientific American Office,
128 Fulton street, New York.

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**THE MECHANIC'S, ENGINEER'S, AND ARTIST'S** Text Book—Now publishing, "The Practical Draughtman's Book of Industrial Design, and Machinist's and Engineer's Drawing Companion," forming a complete course of Mechanical, Engineering, and Architectural Drawing: translated from the French of M. Armengaud, the elder, Professor of Design in the Academy of Arts and Industry, Paris, and MM. Armengaud, the younger, and Amouroux, Civil Engineers; re-written and arranged, with additional matter and plates, by William Johnson, Editor of the "Practical Mechanic's Journal," to which will be added selections from and examples of the most useful and generally employed mechanism of the day. Part I just published, price 37cts; to be completed in 12 monthly parts, each part containing eight quarto plates of engravings and sixteen pages of letter-press.

For sale by all booksellers, and published by STRINGER & TOWNSEND, 222 Broadway, N. Y. 42 2*

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**THE RIDER WATER WHEEL**—Is extensively made by G. T. McLAUTHLIN & CO., sole assignees, at Plymouth, Mass, office in Boston at 108 State st. We know of no wheel so admirably combining, simplicity, power, durability, and true economy in the use of water: it is adapted to all descriptions of work, and to high or low falls, with or without backwater. More Agents wanted. 1*

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No 17 India street, Boston, June 15, 1853.

Messrs. G. T. McLauthlin & Co., Sirs:—Having used one of your Rider Water Wheels to propel our Gang Saw Mill, at Winchester, N. H., for the last five months, it gives us great pleasure to say that it performs to our entire satisfaction. We run from 17 to 25 saws at once, and with five feet head and drawing only about 270 inches of water, we have cut 9,000 feet of boards in ten hours. We find, on trial, that it runs better with a low head, and when deeply flooded with back water, than any other wheel that we have ever seen. With only 3 1-2 feet head, and the wheel flooded with back water 4 feet, we have sawed 4,000 feet of boards in 11 hours Respectfully yours, &c., M. KINGMAN & CO. 1*

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**GWYNNE'S CENTRIFUGAL PUMP**—Mr. J. Stuart Gwynne, New York, Dear Sir: I take great pleasure in saying that the Patent Centrifugal Pump, purchased of you in January last, is satisfactory to me in all respects. For the amount of power employed, I am well satisfied it will throw more water than any other pump I have used or seen. When it was first started it was driven with a gutta percha 1-2 inch cord, but the difficulty of keeping the ends of the belt fastened induced my foreman to substitute a piece of hemp twine, such as bundles of paper are tied up with, and for the past two months we have been driving the pump with this trifling cord. I use the pump for bleach liquor, and it is raised 27 feet at the rate of 40 gallons per minute. I will forward you an order for anothes pump in a few days. Yours truly, E. N. COPE. Hanwell Mills, April 27th, 1853.

Manufactured by the Union Power Co. of U. S. Office 49 Dey street, New York. 1*

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**ANDREWS & JESSUP**—No. 70 Pine street New York, Commission Merchants for the sale of all kinds of Cotton and Woolen Machinery, Machinists' Tools, Belling, &c. Importers and dealers in every variety of manufacturers' articles. 43tf

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**E. A. BOURRY & H. E. ROEDER**—Consulting and Mechanical Engineers; Office No. 333 Broadway, New York City. 43 9*

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**AMERICAN PIG IRON**—Of the brands Wm. Penn, Swede, Anemia, Durham, Allentown, Sterling, Crane, and Mount Hope—also Scotch Pig Iron of favorite brands constantly on hand and for sale by G. O. ROBERTSON, 135 Water street, cor. of Pine. 43 8*

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**IMPROVED CHUCK.**—We, the undersigned, being engaged in the manufacture of an Improved Universal Screw Chuck, so arranged as to work the jaws together or separately with other conveniences, are now prepared to attend to orders at short notice. The securing of a patent is anticipated. E. B. WHITE & CO. 43 6*

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**$100,000** Can be made by the purchase of the Patent Right for Reading's Power Corn Sheller and Separator, to exhibit in the Crystal Palace; it is the best, cheapest, and most durable machine ever invented for the purpose; they are selling rapidly; can now be seen in operation every day from 2 till 5 o'clock P. M., at 208 West 37th st, near 8th avenue, N. Y.; its capacity is 200 bushels per hour. Call and see it. State or county rights and machines for sale low. Apply to Wm. READING, patentee, No. 208 West 37th st. 42 2*

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**MODELS**—Of all kinds of Machinery or Inventions made to order. Address JNO. B. FAIRBANK, 128 Fulton st, Scientific American Office. 41tf

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**STEAM ENGINE FOR SALE**—7 horse-power, new, and in good order: also a cylinder boiler for the engine; it has been used but is in good condition; price $600; the Engine is worth the money. Address MUNN & CO., Scientific American Office.

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**UPTON'S GLUE**—This celebrated brand is noted for its great strength and durability, having been proved by Chickering and Gilbert, the great piano makers of Boston, to be the only glue that will stand in all climates. For sale in barrels and cases by WM. B. PARSONS, Sole Agent, 290 Pearl st, cor. Beekman, N. Y. 40 8*

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**SIXTH ANNUAL EXHIBITION** OF THE MARYLAND INSTITUTE, will open at the unrivalled Hall of the Institute, in the city of Baltimore, on Monday the 3rd day of October, 1853, where articles for competition and premium will be received from Monday, 26th, to Thursday 29th of September, inclusive; after which deposits will be entered for exhibition only. To this Exhibition the artists, inventors, manufacturers, &c., of the entire union, are cordially invited to contribute. The central location of Baltimore, and the high reputation of the Maryland Institute Fairs, will afford them very great advantages in introducing their articles to the public, as there will congregate a great number of persons from every part of the Union. Circulars and any information required will be promptly furnished by application, post paid, to John S. Selby, Actuary. THOS. TREMBLE, Chairman of Exhibition Com. 40 6

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**PORTABLE FORGE AND BELLOWS**—THE Subscriber, successor and sole manufacturer of Queen's Patent Portable Forge and Bellows, offers the same to the public as the best in use for blacksmiths, machinists, boiler makers, coppersmiths, shipping, railroads, mining, quarries, public works, &c., &c.; also a superior jeweller's and dentist's forge, and which is frequently used in laboratories for chemical operations. These forges are constructed with slides for closing up, or they can be placed in any possible position required for safety, and the entire escape of all smoke and gases to the chimney when used in-doors, also prevents any interference to the fire by wind or rain, when used out-doors or upon shipping. Circulars containing full particulars and certificates will be forwarded upon application. FRED. P. FLAGLER, Wholesale and Retail Dealer, 210 Water st. N. Y. 40 4*

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**A GOOD CHANCE FOR MANUFACTURING**—A Water Privilege of ten feet fall, on a never-failing stream, with four acres of choice land, in the town of Cornwall, Orange Co., N. Y., 5 miles from the North River, and three miles from the railroad depot, and on the line of survey of the Albany and Hoboken RR. For particulars inquire of John J. Vanduzer, 134 Canal st, N. Y., or John Orr, on the premises. 40 13*

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**McALLISTER & BROTHER**—Opticians and dealers in mathematical instruments, 48 Chesnut st, Philadelphia Pa. Mathematical instruments separate and in cases, Protractors, Spacing Dividers, Drawing Pens, Ivory Scales, Tape Measures, Salometers, Bourdon Steam Gauge, Spy Glasses, Microscopes, Hydrometers, &c., &c. An illustrated and priced catalogue will be sent by mail free of charge. 39 6m*

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**CAUTION TO MANUFACTURERS** of Wrought Iron direct from the Ore.—All persons are cautioned against infringing the patent of C. S. Quillard, granted Dec. 23rd, 1841, "for combining one or more reverberatory furnaces with a chimney or stack, containing in its lower part a deoxidizing vessel, in such manner that it and the contained ore and carbonaceous matter shall be heated by the flame and escape heat from the reverberatory furnace or furnaces." The undersigned are prepared to dispose of rights to use the same on liberal terms. Charles M. Dupuy, Jr., Rondout, Ulster Co., N. Y.; C. V. Quilliard, 48 West 29th street, New York, assignees. 39 4*

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**KRUPP'S** (London Council Medal 1851) CELEBRATED CAST STEEL—Of any dimensions, warranted superior to any other for Platers and other Rollers requiring hardening; also for hydraulic and other pistons, railway axles, and shafts for steam engines, &c. &c. This cast steel admits of welding without borax with the same facility as iron. THOS. PROSSER & SON, 28 Platt street, New York. 39tf

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**EXCELSIOR SAND PAPER, GLUE**—Premium "Excelsior" Sand and Emery Papers; these papers practical mechanics have decided to be the best the market affords; also "Abbott's" Manilla Sand, and Match Papers, Emery Cloth, Emery of the "Prospect Mills" brand, Corundrum, Pumice Stone ground and in lump, of very superior quality; also Glue of Upton's, Cooper's, and all other brands, in quantities to suit, at the manufacturers' lowest prices, for sale by WILLIAM B. PARSONS, 290 Pearl street, (corner Beekman) N. Y. 40 8*

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**IRON FOUNDERS' FACING MATERIALS**—Viz, Pulverized Black Lead, Soapstone, Hardwood Charcoal, Anthracite, and Sea Coal, of approved quality, for sale by G. O. ROBERTSON, office 135 Water st, corner of Pine, New York. 38 8*

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**PROSPECT MILLS EMERY**—This article has been thoroughly tested by many of our practical machinists, and proved equal to the best "London Extra" Emery; for sale in lots to suit by WM. B. PARSONS, 290 Pearl st; N. Y. 40 8*

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**PORTABLE STEAM ENGINES**—The subscriber is now prepared to supply excellent Portable Engines, with Boilers, Pumps, Heaters, etc., all complete, and very compact, say 1, 2, 2 1-2, 3, 4, 6, 8, and 10 horse-power, suitable for printers, carpenters, farmers, planters, &c., they can be used with wood, bituminous, or hard coal; a 2 1-2 horse engine can be seen in store, it occupies a space 5 feet by 3 feet, weighs 1500 lbs., price $240; other sizes in proportion. S. C. HILLS.
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**ENGINEERING**—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers, and machinery of every description. Broker in steam vessels, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Gauge, Sewall's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc. etc.
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**LATHES FOR BROOM HANDLES, Etc.**—We continue to sell Alcott's Concentric Lathe, which is adapted to turning Windsor Chair Legs, Pillars, Rods and Rounds; Hoe Handles, Fork Handles and Broom Handles.

This Lathe is capable of turning under two inches diameter, with only the trouble of changing the dies and pattern to the size required. It will turn smooth over swells or depressions of 3-4 to the inch and work as smoothly as on a straight line—and does excellent work. Sold without frames for the low price of $25—boxed and shipped with directions for setting up. Address (post-paid) MUNN & CO.
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**PATENT LAWS OF THE UNITED STATES,** and information to inventors and patentees; for sale at the Scientific American office. Price 12 1-2 cents.

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**WHEELER, WILSON, & Co.**—Watertown, Ct., proprietors and manufacturers of Allen B. Wilson's Patent Stitching Machine. Patented June 15, 1852, it can be seen at the Company's Office, 265 Broadway, New York. 30 20*

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35tf Agent A. T. Company.

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**JAMES D. JOHNSON**, Bridgeport, Ct., Proprietor of Wood's Patent Shingle Machine. Persons wishing to purchase rights or machines, can address as above. This is unquestionably the best machine in use for cutting shingles. 33tf

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**WOODWORTH'S PLANING MACHINES** ON hand and manufactured to order, of superior quality at reduced prices, warranted perfect; for steam engines and other machinery. Also Rotary Stave Dressing Machines, capable of dressing staves with the natural growth of the timber, the only one ever invented capable of accomplishing that purpose. Rights for sale in various States. JOHN H. LESTER, 57 Pearl st, Brooklyn, L. I. 35 10*

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**NEW WORKS ON CIVIL ENGINEERING**—The Field Practice of Laying out Circular Curves for Railroads: by John C. Trautwine, C. E.; second edition, in pocket-book form. A New and Rapid Method of Calculating the Cubic Contents of Excavations and embankments, by the aid of Diagrams: by John C. Trautwine, C. E., with 10 copper-plates. Price $1 each; postage on the Curves, 5 cents, and on the Excavations and Embankments, 8 cents. The postage may be remitted or not, as the Post Office does not require pre-payment. For sale by Wm. HAMILTON, Hall of the Franklin Institute, Phila. 35 3m

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"At the Oakland Works of Sherry & Byram there are made some of the finest clocks in the world."—[Scientific American. 19 13eow

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**FIRE BRICKS**—Fire Clay, Fire Sand, and Moulding Sand, for Iron and Brass Founders, for sale by G. O. ROBERTSON, 135 Water st, corner of Pine, New York. 38 8*

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**NEW METHOD FOR MAKING WROUGHT** Iron direct from the Ore—The proprietors of James Renton's Patent, who have purchased Alex. Dickerson's patent for the above purpose, are desirous of introducing the invention into general use, and invite parties who may wish to negotiate for rights for States and counties, or for furnaces, to make immediate application, and to examine the furnace which is in successful operation at the American Iron Company's Works, Newark, N. J. The invention is exciting considerable interest; gentlemen from all parts of the country, who are engaged in the manufacture of iron, have examined the furnace in its workings, and give it their decided commendation. A circular, giving more minute information, will be sent to those desiring it. The rights for several States and counties have already been disposed of. Applications for rights in the State of New Jersey may address the Hon. J. M. Quinby, President of the American Iron Company. Inquiries or applications for other States may be made to A. H. BROWN, Newark, N. J., Office 107 Market st. 34tf

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**BEARDSLEE'S PATENT PLANING** Tonguing and Grooving Machines—These celebrated machine have now been generally introduced in various portions of the United States. More than thirty are now in successful practical operation in the State of New York alone. As an illustration of the extent of work which they are capable of performing, with unrivalled perfection, it is sufficient to state that, within the last six months and a half, over five millions of feet of spruce flooring have been planed, tongued and grooved by one of these machines at Plattsburgh, N. Y., never running to exceed ten hours a day. The claim that the Beardslee machine was an infringement upon the Woodworth patent, has been finally abandoned; and after the proofs had been taken, the suit instituted by the owners of that patent was discontinued, and the whole controversy terminated on the first of November. Applications for machines or rights may be made to the subscriber, GEO. W. BEARDSLEE, 57 State street, or No. 764 Broadway, Albany. 15tf

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**THE NEW HAVEN MANUFACTURING** Company, New Haven, Conn., having purchased the entire right of E. Harrison's Flour and Grain Mill, for the United States and Territories, for the term of five years, are now prepared to furnish said mills at short notice. These mills are unequalled by any other mill in use, and will grind from 20 to 30 bushels per hour (of fine meal), and will run 24 hours per day, without heating, as the mills are self-cooling. They weigh from 1400 to 1500 lbs., of the best French burr stone, 30 inches in diameter: supply packed in a cast-iron frame, price of mill $200, packing $5. Terms cash. Further particulars can be had by addressing as above, post-paid, or to S. C. Hills agent N. H. M. Co., 12 Platt st, N. Y. 28tf

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**A. B. ELY,** Counsellor at Law, 52 Washington st., Boston, will give particular attention to Patent Cases. Refers to Munn & Co., Scientific American. 16tf

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**LEONARD'S MACHINERY DEPOT, 109** Pearl-st. and 60 Beaver, N. Y.—Leather Banding Manufactory, N. Y.—Machinists's Tools, a large assortment from the "Lowell Machine Shop," and other celebrated makers. Also a general supply of mechanics' and manufacturers' articles, and a superior quality of oak-tanned Leather Belting. 40tf
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**LOGAN VAIL & CO.,** No. 9 Gold st, New York —Agency for Geo. Vail & Co., Speedwell Iron Works, Norristown, N. J., furnish and keep on hand Portable Steam Engines of various sizes, Saw and Grist Mill Irons, Hotchkiss's Water Wheels, Iron Water Wheels of any size, Portable Saw Mills, complete; Bogardus's celebrated Planetary Horse Powers; heaving forgings and castings for steamboats and rolling mills, Ratchet Drills of superior quality for machinists, Saw Gummers, Hand drills, Tyre Benders, and shafting and machinery generally. 38 1y

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**J. D. WHITE'S PATENT CAR AXLE LATHES** —also Patent Engine Screw Lathes, for boring and turning tapers, cutting screws, &c. We manufacture and keep constantly on hand the above lathes; also double slide Chuck and common Hand Lathes, Iron Planers, S. Ingersol's Patent Universal Ratchet Drill, &c. Weight of Axle Lathe, 5,500 lbs; price $600; Engine Screw Lathe, 1400 to 7,000 lbs; price $225 to $675.
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Windsor Locks, Conn.

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**THE NEW HAVEN MANUFACTURING CO.** No. 2 Howard st, New Haven, Ct., are now finishing 6 large Lathes, for turning driving wheels, and all kinds of large work; these lathes weigh 9 tons, and swing 7 1-3 feet, shears about 16 feet long. Cuts and further particulars can be had by addressing as above, post-paid, or to S. C. Hills, agent N. H. M. Co., 12 Platt st, N. Y. 28tf.

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**LEE & LEAVITT**—Manufacturers of every description of Cast Steel Saws, No. 53 Water street, between Walnut and Vine, Cincinnati, O. 27 6m*

# SCIENTIFIC MUSEUM.

### Of Soaps and their Employment in Manufacture.

The following is an abstract of an article from our valuable exchange "The London Chemical Gazette," by Prof. F. C. Calvert. The manufacture of soaps may be ranged under two general heads, the one relating to hard soaps, and the other to soft soaps. Both soaps contain fatty matter, but in the latter case it is combined chiefly with potash, and in the former with soda. Another difference is, that soft soaps contain all the substances which composed the fatty matter employed in their preparation; whilst in the soda soaps one of these substances is removed, namely, the oxyde of glyceryle or glycerine. Thus, in the manufacture of soft soaps, either the fatty matters mixed with a large proportion of fish oil, or the fish oil itself, is boiled with caustic lye, and when saponification is effected, and the whole sufficiently concentrated, it is allowed to cool; while, in the case of hard soaps, the caustic lyes employed contain a sufficient amount of water to dissolve the glycerine as it is removed from the fatty matters by the action of the alkali contained in the caustic lye.

It is easy to understand that a great variety of soaps must be manufactured to suit the various purposes to which soaps are applied in domestic and manufacturing concerns; and so we find that different qualities of soap are manufactured for boiling silks, cleaning wool, or for cleaning madder goods, and giving to the different colors, obtained from this root, a greater brilliancy and permanence. Soaps used by the same firm frequently vary 25 per cent. in quality.

The following composition shows the proportion of parts of soaps used for the purposes stated, containing 30 per cent. of water. Composition of soaps per 1000 parts: for calico printer's soap—fatty matters 640, soda 60, water 300; silk dyers' soap—fatty matters 619, soda 81, water 300; wool scourers' soap—fatty matter 614, soda 86 and water 300. From these results we find that the soaps employed vary in the quantity of alkali, according to the nature of their application; thus, in 1000 parts of soap there are 21 parts more of alkali in the one used for boiling silk, and 26 parts more of alkali in that employed for cleaning wools, than there are in the soaps best suited for cleaning madder purples. These facts show the importance of inquiring into the real composition of soap before employing it for a given purpose. It is observable that the soap containing a slight excess of alkali, which is the best suited for clearing madder reds or dark pinks, would deteriorate the beauty of the madder purples. In the first place the dyer has in view not only to fix and brighten his reds or pinks, but further to remove the yellow coloring matter, and also partially the red; whilst, in the latter, a soap containing as little alkali as possible, appears to give the best results. The two following soaps are best suited for these purposes:—Soap for purples—fatty matter 60·4, soda 5·6, water 34; and soap for dark pinks—fatty matter 59·23 soda 6·77, water 34. Still it is true that calico printers generally employ the same quality of soap for all shades of madder goods. Some dyers think they overcome this difficulty by employing more or less of the same soap, but this is an error; household soap of an inferior quality is frequently found in print-works, some containing 10 per cent. of rosin, and others glue. Soaps made from a vegetable oil composed of margarine and oleine, or with an animal fatty matter, is better for madder colors than that obtained from liquid oleine containing small amounts of margarine and stearine, which is extensively used by soap makers at the present day.

We hope these remarks will direct attention to this very important subject. There is perhaps a greater diversity of soaps made in our country than any other, and a soap adapted for one purpose may not be suitable for another; yet some people appear to buy and use soap without any reference to, or idea of its quality; if it is soap, that is enough for them. There is no Turkey-red dyeing in our country, but in many of our calico print works, madder colors are not uncommon; let the chemist look to his soap, in such cases. In woolen mills and dye-works, where much soap is required, let the dyers see to it, that they are working on a truly economical plan, in reference to the soap which they use.

(For the Scientific American.)

### Entomology.

[Continued from page 336.]

IX.—Lepidoptera—(Scaly-winged.)

*Acherontia Atropas.*

These insects comprise nearly one-sixth of the whole number. They suck by a proboscis, usually coiled up under the head, and formed by the interlocking of the lower jaws prolonged. The antennæ are jointed; the wings cannot be folded; and the pairs are often held together in flight by a strong bristle on one, playing in a loop on the other. Their color is due to oval scales attached to them by stalks, and arranged in rows lapping like tiles in a roof. The females are larger and more dull-colored; all caterpillars are their larvæ. These burrow or envelope themselves in leaves; or live in cases or in societies under silken tents. They change their skin four times, and then usually spin a cocoon for the crysalis state. This the nymph softens by a red liquid, and makes its exit as a moth. They expand the wings by filling the tubes with air. The Diurna or Butterflies keep the wings vertical in repose. They have two large eyes, each composed of 10,000 convex lenses. Their catterpillars have 16 feet, 12 minute eyes, 92 nerves, and a stomach occupying nearly the whole body. Their pupæ hang by the tail, except those of the Skipper kind. The common species, as the peacock, painted lady, red admiral, tortoise-shell, etc., have knobbed auteunæ and fore-legs very small and concealed. The purple emperor is noted for its changeable hues and high and rapid flight. Darwin, while at sea, ten miles off the Bay of St. Blas, saw a migratory column of butterflies one mile in width, several in length, and 200 yards in height. The group of Crepuscularia or Hawk-moths are mostly twilight fliers, with thick autenuæ, and wings horizontal in repose. The larva resembles the ancient Sphinx. The death's-head moth, (represented above), has a skull-like patch on the back, and brays like an ass. Another kind, surnamed the elephant, has a long trunk. The bee-bird flies in the hot sunshine, and emits a full, deep sound while poised over flowers. The Nocturnal Moths have tapering auteunæ, and are of dull color. The wings are horizontal or inclined in repose; sometimes they are rolled round the body or folded like a fan. The tribe Bombycidæ contains the largest Lepidopterai, a native of China, measuring 12 inches across the wings. The prevailing hue is gray, the wings have eye-like spots, and the trunk is short. The silk-worm undergoes four metamorphoses: the larva at first weighs 1-100th of a grain; but when a month old, increases to 9500 times this, ceases to eat forever, and projects pulpy twin filaments from its nose, which harden in the air, and are coiled into an avoid nest in 3 or 4 days. Four of these cocoons produce one grain of silk. The filament on each is 1-2000 of an inch in diameter, and 1526 feet long; so that the length of the annual amount spun at Lyons is six and a half billions of feet, or 14 times the mean radius of the earth's orbit. The larvæ from an ounce of eggs require 2000 lbs. of leaves, and yields 88 lbs. of cocoons. A silk thread is thrice as strong as one of flax. Seven other species afford this article: that of the Arindy is delicate, flossy, and so durable that the life of a man is insufficient to wear out a garment made up of it. The Tussch is coarse and dark colored; the filament of another will hold 198 grains, and the cocoons are preferred to leather by the Mahrattas. Stockings and handkerchiefs are made of other kinds in Chilpancingo and Oaxaca. Besides silk the Chinese procure a fine varnish and fabricate the Indian grass of anglers. The Processionary moths of France travel thus: first the chief, then the body-guard in Indian file—the head of the second touching the tail of the first; next equal series of pairs, then of threes, etc. The ghost-moth of another tribe is anti to the hop; and to the anatomy of the caterpillar of another tribe, Lyonet devoted 20 years of study, and found 4041 muscles. The millers that flutter about our candles belong to the tribe Noctuidæ. The larvæ of one species have such a migratory propensity that in 1842 they so thickly covered the railway over the Congaree Swamp, S. C., as to stop the locomotive. Another tribe infest the apple tree, oak, and vine. One caterpillar lives in a silken tent, which it enlarges as it grows by slitting it and introducing a strip; and when threatened by violence, it fastens it by producing a vacuum. The well-known Loopers or Geometers often remained fixed in one place for several days and resemble sticks. Plumed moths are small, and have stellated wings. The Teneidæ are those so injurious to fur and woollen stuffs. The material of their case is curiously felted; and the color the same as that of the article from which it is taken.

[Concluded next week.]

### Tea at Home.

It will surprise many to know that we need no longer rely on China for tea, but drink our home grown English, and so be independent of the foreigner—it such independence is worth caring for. Mr. Alexander Forsyth has addressed a communication to the Horticultural Society, in which he says that, having considered that the tea of Paraguay is a species of holly, he tried our common holly, and finds the tea, when washed, equal to ordinary five shilling tea. The prickles serve an important purpose, for they keep the leaves separated during the roasting, and thus save the trouble of frequent turning. The smell given off is at first unpleasant, but it disappears entirely as the leaves cool."—"What will tea drinkers, confirmed tippling tea drinkers say to this?" observes Mr. Forsyth. "The very tea itself becomes cheap at last, and abundant, growing even in the garden hedge. A forest of tea trees in full leaf at our door? Such a harvest has never before been seen. Waste not the holly any more upon whip handles; peel it not for bird lime as formerly; squander it not even at Christmas; but roast it, roast it again and again, for the store will be annually renewed, and the future foilage will furnish finer tea leaves than those just gathered." What an opportunity here for the adulterators; they will doubtless take care that the public drink holly tea whether or no."—[Chambers' Journal.

### The Waists of American Women

The unnatural length and ridiculous smallness of their waists baffle description. A waist that could be spanned, is an English metaphorical expression used in a novel—but it is an American fact; and my first sentiment on viewing the phenomenon was one of pity for unfortunate beings who might possibly break off in the middle, like flowers from the stalk, betore the evening concluded. No less extraordinary is the size of the ladies' arms, I saw many which were scarce thicker than moderate sized walking sticks. Yet, strange to say, when these ladies pass the age of forty, they frequently attain an enormous size. The whole economy of their structure is then reversed, their wrists and arms becoming the thickest parts of their body.—Here is a subject worthy the contemplation of the ethonologist. How comes it to pass that the English type—which I presume has not, in every case, been so affected by the admixture of others as to lose its own identity—how comes it to pass, I say, that the English type is so strangely altered in a few generations? I have heard various hypotheses, amongst others, the habits of the people—the dry climate. The effect of the latter on a European constitution, would have appeared to me sufficient to account for the singular confirmation, if I had not been persuaded by natives of the country that the small waist is mainly owing to tight lacing. This practice, it is said, is persevered in to an alarming extent; and if report be true, it is to be feared that the effects will be felt by future generations, to a greater degree than they are at present.—[Dublin University Magazine.

[We have noticed the above in a great number of our exchanges without a single word of comment. It is notoriously untrue; every statement is false; tight lacing is less common in New York than Dublin.

### Interesting Patent Case.

On the 25th ult., an injunction was granted by Judge Nelson, at Cooperstown, N. Y., to restrain Seymour & Morgan, from infringing the patent of McCormick for manufacturing reapers.

### Independence Day.

The 77th anniversary of the glorious declaration of independence was celebrated on last Monday, with great spirit, in our city. The day was fine and all appeared to be joyful.

### LITERARY NOTICES.

Langstroth on the Hive and the Honey Bee—This is a very complete Manual for bee keepers; it describes very minutely the habits and the most approved mode of keeping, treating, and preserving bees; it is carefully written, upon very extensive observation made by the Rev. L. L. Langstroth. The work is comprehensive, embracing nearly 400 12mo. pages: it contains an engraving and description of an excellent bee hive constructed by the author. For sale by Newman & Ivison, 178 Fulton, st., N. Y.

The Practical Draughtsman's Book of Industrial Design, and Machinist's and Engineer's Drawing Companion: translated from the French of M. Armingand, by Wm. Johnson, Assoc. Inst. C. E., &c. This is a work admirably arranged and designed for the purpose which its title indicates: it is published in 12 monthly parts at 37 1-2 cts. each, by Stringer & Townsend, 222 Broadway; part first has just issued.

We have just received two numbers of the "United States Illustrated," in views of city and country, by Charles A. Dana. This is one of those choice, elegant publications which deserves, and will doubtless receive, an extensive patronage; each number contains four beautiful steel plate engravings with descriptions, &c., of the grandest scenery, of which our country can boast; it is published by Herman J. Meyer, 164 William st.

The New York Atlas is the pioneer of the Sunday press, it evinces its prosperity by enlarging its superficial area, so that now it is one of the largest weekly journals now published within the boundaries of Gotham. We can say a good deal more, it is an interesting and very ably managed paper, and for city intelligence it stands alone and unapproachable. It is a good advertising medium, has a wide circulation, and is not niggardly in its accommodations to its patrons either in a complimentary or typographical point of view. Herrick & Ropes, publishers 44 Ann street.

Meyer's Universum—Those who have the pleasure of perusing this publication, will agree with us that it is decidedly tasteful, as well as in structive, and elegant: few if any in our country equal it in beauty and design. Published at 164 William st, N. Y.

The Ship Builder's Manual, and Nautical Referee: by John W. Griffiths, author of "Theory and Practice blended in Ship Building," &c. This is an excellent work; it is printed in large type and illustrated by excellent engravings. Published monthly by Adriance, Sherman & Co., No. 2 Astor Place.


MECHANICS

## Manufacturers and Inventors.

A new Volume of the SCIENTIFIC AMERICAN commences about the middle of September in each year. It is a journal of Scientific, Mechanical, and other improvements; the advocate of industry in all its various branches. It is published weekly in a form suitable for binding, and constitutes, at the end of each year, a splendid volume of over 400 pages, with a copious index, and from five to six hundred original engravings, together with a great amount of practical information concerning the progress of invention and discovery throughout the world.

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